

SAMPLING ACTIVITIES REPORT

**2011 Sampling Season
Final, Revision 0**

**Carpenter Creek
Cascade County, Montana**

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Sampling Activities Report – Carpenter Creek – Cascade County, Montana

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Acronym List

| | |
|----------|---|
| CLP | Contract Laboratory Program |
| DO | Dissolved Oxygen |
| DOC | Dissolved Organic Carbon |
| EPA | United States Environmental Protection Agency |
| ERT | Environmental Response Team |
| ESAT | Environmental Services Assistance Team |
| GPS | Global Positioning System |
| mL | Milliliter |
| MSL | Mean Sea Level |
| RPD | Relative Percent Difference |
| SAP/QAPP | Sampling and Analysis Plan/Quality Assurance Project Plan |
| SAR | Sampling Activities Report |
| SOP | Standard Operating Procedure |

1.0 INTRODUCTION

This document is the Sampling Activities Report (SAR) for the Carpenter-Snow Creek Mining District in Cascade County, Montana. This SAR summarizes field activities for 2011 performed for the high and low flow sampling events conducted during June and September, in addition to the soil sampling field event conducted in July and toxicity test surface water collection in August. The sampling events were performed to evaluate the extent of metals contamination in the Snow Creek, Belt Creek and Carpenter Creek drainages, and to support future response actions. The following were sampled or assessed during the investigations: surface water (including adit discharges and pore water), sediment, soil (waste rock), stream flows, in-situ water chemistry, and habitat. Surface water, soil, and sediment samples were collected at locations specified in the Carpenter Creek Sampling and Analysis Plan/Quality Assurance Project Plan (SAP/QAPP) amended (Environmental Services Assistance Team [ESAT], 2011, 2011a).

This summary report includes the following sections: Sampling Activities and Procedures (Section 2.0), Sample Quality Control (Section 3.0), Field Changes and/or Corrective Actions (Section 4.0), Analytical Results (Section 5.0), and References (Section 6.0).

1.1 Site Background and Description

The Carpenter Creek Mining District is located in the southeastern portion of Cascade County, Montana, including the town of Neihart, and is approximately 60 miles southeast of Great Falls. The district can be accessed via Montana State Highway 89. The historical mining district that includes the Carpenter and Snow Creek Mining Complex is situated on the rugged and timbered northern flank of the Little Belt Mountains in the Lewis and Clark National Forest. Numerous abandoned mine sites are present in the district in the Carpenter and Snow Creek drainages, and in several other tributary drainages to Belt Creek which flows through the Neihart town site. The project sites in the two drainages are accessed from the west by Carpenter Creek Road (Forest Service Road No. 3323). The study area is shown entirely on the United States Geological Survey's Neihart, Montana 7.5-minute quadrangle. Elevations are over 6,000 feet above mean sea level (MSL) throughout most of the Neihart Mining District. Pioneer Ridge and Poverty Ridge, which flank the two drainages, crest at elevations above 7,600 feet above MSL. Vegetation in the area consists of dense, coniferous forest. The ridge and ravine topography is characterized by steep slopes with an estimated gradient of 30 degrees. Mining activities have occurred intermittently in the district since ore was discovered by prospectors in 1881 (United States Environmental Protection Agency [EPA], 2009 Carpenter-Snow Creek Record of Decision).

1.2 Objective

Four sampling events were conducted in 2011 in order to evaluate the nature and extent of metals contamination in surface water, sediment, and soil. The following data was collected during these events:

- Real-time field water quality parameters – pH, conductivity, dissolved oxygen (DO), temperature, and stream flow
- Surface water – dissolved metals, total recoverable metals, dissolved organic carbon (DOC), anions, alkalinity, subsurface pore water (for total and dissolved metals), and toxicity testing water at select stations
- Sediment – total recoverable metals and mercury, and bulk sediment for toxicity testing at select stations

- Soil – total recoverable metals and mercury
- Habitat assessments

2.0 SAMPLING ACTIVITIES AND PROCEDURES

Field activities at the Carpenter Creek and Snow Creek Mining Complex took place during June, July, August, and September of 2011. Specific activities included the following:

- June 13-16
 - Real time field water quality parameters
 - Stream flow data
 - Surface water sampling
 - Global Positioning System (GPS) data
- July 11-14
 - Soil (waste rock pile) sampling
 - Surface water and adit discharge sampling
 - Sediment sampling
 - GPS data to delineate impacted areas
- August 27
 - Bulk surface water collection at select locations for toxicity testing
 - GPS data
- September 26-29
 - Real-time field water quality parameters
 - Stream flow data including pore water
 - Surface water sampling
 - Sediment sampling (including bulk samples at select locations for sediment toxicity test)
 - GPS data
 - Habitat assessments

2.1 Sample Handling and Identification

Samples were collected, placed in containers, processed, and preserved in accordance with the EPA Region 8 Field Sampling Protocols Standard Operating Procedure (SOP) # 2013 (Surface Water Sampling), EPA Environmental Response Team (ERT) SOP #2016 (Sediment Sampling), and as outlined in the Final SAP/QAPP for the Carpenter Creek and Snow Creek Mining Complex (ESAT, 2011). Sample labels and chain of custody records were completed in accordance with the EPA Region 8 Field Sampling Protocols.

Surface water and sediment samples collected during these events were identified by the stream name followed by a station number. For example, locations in Carpenter Creek and Snow Creek were identified as CSC – XXX, with the station number corresponding to its location along the stream. Locations along Belt Creek were identified as ST-XXX. Duplicate samples were indicated with the word “Dup” immediately following the sampling location identification number. Surface water sampling

locations are shown in Figure 2.1-1. Soil samples collected during the July event were identified by the waste rock pile name in a number code format. For example, locations on Silver Dyke Adit were prefixed with 07-135 – XXX to be consistent with the numbering used by state of Montana’s Abandoned Mine Program when these mines were sampled in the early 1990s. The station number corresponds to its location on the waste rock pile. Opportunistic soil samples were identified with the prefix OPP followed by a number (example: Opp-XX). Soil sampling locations are shown in Figures 2.1-2 – 2.1-10.

2.2 Surface Water Sampling

Surface water samples were collected during the June and September events at locations along Carpenter Creek, Snow Creek, and Belt Creek. Discrete surface water, pore water, and adit discharge samples were collected in 250 milliliter (mL) polyethylene bottles (total recoverable metals), 250 mL Nalgene filter bottles (dissolved metals and DOC), and 500 mL polyethylene bottles (alkalinity and anions). Real-time water quality data (pH, temperature, dissolved oxygen, and specific conductivity) were also collected at each sampling location using an In-Situ® multi-parameter meter. Results were recorded in a project-dedicated field notebook. In addition, stream flow measurements were made at select locations using a Flow Tracker® flow meter or cutthroat flumes if conditions allowed. Sample locations that were not identified in past investigations were collected using a GPS. All locations are shown in Figure 2.2-1. Sample locations and coordinates are archived in the EPA Spatial Data Engine database.

After collection, surface and pore water samples were filtered (if required) and preserved with nitric acid (total and dissolved metals), phosphoric acid (DOC), or ice (alkalinity and anions). After preservation, all samples were placed in a cooler with ice until transported to the EPA Region 8 Laboratory for analysis. Samples were analyzed at the EPA Region 8 Laboratory for the following: total and dissolved metals (EPA methods 200.7 and 200.8), hardness (EPA method 2340B calculated from calcium and magnesium results), DOC (EPA method 415.3), mercury (EPA method 7470 A), alkalinity (EPA method 160.1), and anions (chloride, fluoride, and sulfate using EPA method 300.0).

2.3 Pore Water Sampling

Pore water samples were collected during the September sampling event at select locations along Carpenter Creek, Snow Creek, and Belt Creek. Pore water samples are collected by placing a Push Point® sampling probe into the hyporheic zone of the streambed, purging until the water becomes clear, and then collecting the sample. Purging and sampling was accomplished by inserting a station dedicated tube over the Push Point probe, then using a station dedicated 60 mL syringe to pull the water through the probe. Pore water samples were analyzed for total recoverable metals and dissolved metals.

2.4 Sediment Sampling

Sediment samples were collected during the September 2011 sampling event from Carpenter Creek, Snow Creek, and Belt Creek in order to determine contaminant loading in streambed sediments and to conduct toxicity testing. Samples were collected in accordance with the protocols outlined in EPA ERT SOP 2016 “Sediment Sampling” and as described in the Final SAP/QAPP for the Carpenter Creek and Snow Creek Mining Complex (ESAT, 2011). Samples were collected using a Teflon™ scoop and placed either in a 50 mL polyethylene bottle (total recoverable metals and mercury analysis), or 1 liter containers for bulk sediment toxicity testing. Sediment samples were transported in coolers on ice to the EPA Region 8

Laboratory for total recoverable metals analysis using EPA methods 200.7 and 200.8, and mercury using EPA method 7470 A. Results from the Carpenter Creek sediment toxicity test are included in Appendix B.

2.5 Soil Sampling

Soil samples were collected during the July 2011 sampling event from several waste rock piles in the Carpenter Creek, Snow Creek, and Belt Creek drainages in order to determine the potential for contaminant leaching into Carpenter Creek, Snow Creek, and Belt Creek. Samples were collected in accordance with the protocols outlined in EPA ERT SOP# 2012 “Soil Sampling” and as described in the Final SAP/QAPP for the Carpenter Creek and Snow Creek Mining Complex (ESAT, 2011). Samples were collected using a Teflon™ scoop or stainless steel spoon and placed in gallon sized zip lock baggies. Soil samples were transported in coolers on ice to the EPA Region 8 Laboratory before shipment to a Contract Laboratory Program (CLP) laboratory for analysis. Sample locations are shown in Figures 2.1-1 through 2.1-10. Sample locations were recorded in the field using GPS. All GPS coordinates are archived in the EPA Spatial Data Engine database.

2.6 Toxicity Test Bulk Surface Water Collection

Bulk toxicity test surface water samples were collected on August 27th at select locations along Carpenter Creek, Snow Creek, and Belt Creek. Toxicity testing surface water samples were collected in 1 and 2.5 gallon sized containers after a triple rinse at each respective sampling location. Results from the surface water toxicity test are included in Appendix A.

2.7 Sample Documentation

At the time of sampling, the following site information was recorded in the site dedicated logbook: sampling date, time, location, weather conditions, personnel, real-time stream data (pH, DO, specific conductivity, and temperature), and/or other pertinent observations (Attachment B). Surface water, sediment, and soil samples submitted for laboratory analysis were entered into a chain of custody system using Scribe.

3.0 SAMPLE QUALITY CONTROL

This section details the quality control methods used in the field for activities performed during the sampling effort. These include decontamination methods, field instrument calibration, and duplicate sample collection.

3.1 Decontamination Methods

All sampling equipment (containers, personal protective equipment, soil and sediment scoops) involved in field sampling activities were either disposable, station dedicated, or decontaminated between sample locations. All decontamination methods were performed in accordance with SOP# 2006 “Sampling Equipment Decontamination” (EPA 1994).

3.2 Field Instrument Calibration

Field instrumentation requiring calibration or routine function checks included the water quality meters and the Flow Tracker® flow measurement devices. The water quality meter, which consists of a pH probe, dissolved oxygen meter, conductivity meter, thermometer, and barometer was calibrated daily and compared to certified pH and conductivity standards. Dissolved oxygen was calibrated using the saturated water approach on a daily basis and as needed in the field. The water quality meter thermometer and barometer are calibrated on an annual basis in accordance with the manufacturer's recommendations. All calibration procedures were recorded in the instrument's calibration notebook. The Flow Tracker® flow meters have routine internal function checks that are conducted in the field prior to data collection.

3.3 Duplicate Sample Collection

Duplicate samples were collected during these events in order to determine sampling precision and correlation between samples. According to the EPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (2004), a control limit of 20% for water and soil and 35% for soil and sediment for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values \geq 5 times the Contract Required Quantitation Limit. These are laboratory guidelines and may not apply to all field situations. RPD was evaluated for surface water total and dissolved metals (contaminants of potential concern). RPD values were also calculated for total recoverable metals (contaminants of potential concern) for soil and sediment. Results of the RPD evaluation are included in the analytical data tables. RPD values were calculated using the following equation:

$$\text{RPD} = [\text{ABS}(\text{Sample Result} - \text{Duplicate Result})]/[(0.5 * (\text{Sample Result} + \text{Duplicate Result}))]$$

RPD values for dissolved metals for the June surface water sampling event were consistently low with the exception of the aluminum and zinc results for the third duplicate collected (58.7% and 22.4% respectively). RPD values for total recoverable metals for the June event were also consistently low with the exception of cadmium and copper in the first duplicate (22.9% and 40% respectively) and lead (87.3%) in the third duplicate. RPD values for dissolved metals and total recoverable metals during the September sampling event are all consistently below 20%.

Below is a list of sites where duplicate samples were collected for each event:

June:

- CSC-105
- CSC-119
- ST010A

July:

- 07-079-SE1
- Opp-14
- 07-084-AD2
- 07-135-WR2

September:

- CSC-101
- CSC-116A (including pore water)

3.4 Blanks

In order to evaluate the potential of sample contamination during collection and/or transport to the laboratory, as well as contaminants introduced at the laboratory, aqueous blanks were processed in the field using E-pure de-ionized water. Blank samples were analyzed for total recoverable metals, dissolved metals, mercury, alkalinity, anions, and DOC. All blank results were either below, or just above the method detection limit for each analyte indicating no substantial contamination issue associated with the collection and/or laboratory analysis process.

4.0 FIELD CHANGES AND/OR CORRECTIVE ACTIONS

Below is a summary of changes to the SAP that occurred in the field during the June, July, and September sampling events:

- During the June event, flows at several sites were not collected due to very high and dangerous flow conditions.
- During the June and September events, the mouth of Squaw Creek moved and an opportunistic sample was taken at the first unbraided location of Carpenter Creek below the new confluence of Squaw Creek and Carpenter Creek. The sample identification for that location was called CSC-116a-Opp-2.
- An additional sample was collected below CSC-113 and was named CSC-113-Opp-1. The sample was collected due to changes in flow pattern below site CSC-113 where Carpenter Creek had a new confluence with Haystack Creek. It was also noted that straw bales were placed on the stream bank throughout the area.
- During the July soil sampling event, DO readings were not obtained in the Silver Dyke Tailings area due a malfunctioning DO sensor.
- During the July soil sampling event multiple locations were not sampled because it was determined that the area was talus and not waste rock
- During the July soil sampling event an opportunistic soil sample was taken at the Black Diamond Jay Mine and multiple opportunistic surface water samples were taken at the Big Seven Mine based on field observations. In addition, it was determined that Silver Dyke Mill waste was across the road and two opportunistic samples were taken.
- EPA could not get access in time to sample the Dacotah Mine so this mine was not sampled. However, a surface water sample (07-121-SW1) was taken down gradient of the mine.
- It was determined that not enough mine waste was present at the Hartley Mine property other than large piles of overburden, so no samples were taken.
- During the fall sampling event, it was decided to change the reference location from site CSC-120 to site CSC-120A. It was noted that this location should originally have been the reference location for that creek.
- During the September sampling event, flows were not collected at site CSC-107 due to excessive braids in the stream.
- In accordance with revisions to the SAP, five samples were collected along a transect at sampling location ST-005. Samples were labeled ST-005-1 (river left) through ST-005-5

(river right). Samples were collected in accordance with Section 5.0 “Sampling Locations” of Revision 1 of the Carpenter Creek SAP/QAPP (ESAT 2011a).

- During the September sampling event, pore water sample depths were not recorded in field logbooks. Only one location, CSC-113, has the pore water sample depth recorded (10 cm).

5.0 ANALYTICAL RESULTS

Analytical results from the EPA Region 8 Laboratory and CLP are presented in Table 5.0-1 through Table 5.0-9. Habitat assessment summary tables are included in Table 5.0-10 and in Attachment D. Toxicity testing reports are included in Appendix A (surface water) and Appendix B (sediment). Flow Tracker® summary sheets are included in Attachment A. The following sections give a general breakdown of analytical results.

5.1 Surface Water

Analytical results for dissolved metals and total recoverable metals (including mercury) are provided in Tables 5.0-1 and 5.0-2 for June and Tables 5.0-4 and 5.0-5 for September. Table 5.0-3 contains anion, alkalinity, and DOC results from the June event. Table 5.0-7 contains pore water dissolved metals and total recoverable metals results collected during the September event. CLP Analytical results for the July adit water sampling are included in Table 5.0-8.

5.2 Sediment

Sediment samples collected during the September event were analyzed for total recoverable metals and mercury; data is included in Table 5.0-6.

5.3 Soil

Soil and sediment samples collected during the July event were analyzed by CLP for total recoverable metals and mercury. Results are provided in Table 5.0-9.

5.4 Stream Flows

Stream flows were collected for sites during the June and September sampling events using Flow Tracker® flow meters. Flow measurement summary sheets are included in Attachment A.

5.5 Habitat Assessment

Habitat Assessments were conducted during the fall 2011 sampling event. Results from the assessment are included in Table 5.0-10 and in Attachment D.

6.0 REFERENCES

Environmental Services Assistance Team. 2011. Final Sampling Analysis Plan/Quality Assurance Project Plan – 2011 Sampling Event. Carpenter Snow Creek National Priorities List site, Cascade County, Montana.

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Sampling Activities Report
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Tables

Table 5.0-1 Carpenter-Snow Creek Dissolved Metals Analytical Results and RPD Calculations - June 2011

| STATION_ID | ANALYSIS | UNITS | Aluminum | Antimony | Arsenic | Barium | Beryllium | Cadmium | Calcium | Chromium | Cobalt | Copper | Hardness (mg/L) | Iron | Lead | Magnesium | Manganese | Nickel | Selenium | Silica (SiO2) | Silver | Strontium | Thallium | Vanadium | Zinc |
|---------------|------------------|-------|----------|----------|---------|--------|-----------|---------|---------|----------|---------|---------|-----------------|--------|---------|-----------|-----------|---------|----------|---------------|---------|-----------|----------|----------|---------|
| CSC-101 | Dissolved Metals | ug/L | 37.1J | <0.500U | <0.500U | 65.5 | <0.100U | 0.976 | 14000 | 0.881J | <0.100U | 11.0 | 50 | <100U | 0.554 | 3590 | 99.5 | <0.500U | <0.500U | 7390 | <0.100U | 101 | <0.500U | <1.00U | 166 |
| CSC-102 | Dissolved Metals | ug/L | 33.0J | <0.500U | <0.500U | 77.0 | <0.100U | <0.100U | 15400 | 0.868J | <0.100U | <0.500U | 54 | <100U | <0.100U | 3750 | 8.77 | <0.500U | <0.500U | 6960 | 1.79 | 114 | <0.500U | <1.00U | 25.8 |
| CSC-103 | Dissolved Metals | ug/L | 68.1 | <0.500U | <0.500U | 12.5 | <0.100U | 5.42 | 7510 | <0.500U | 0.662 | 60.4 | 30 | <100U | 4.23 | 2800 | 537 | 2.78 | <0.500U | 9370 | 0.691 | 41.8 | <0.500U | <1.00U | 865 |
| CSC-103A | Dissolved Metals | ug/L | 57.4 | <0.500U | <0.500U | 11.8 | <0.100U | 5.61 | 7290 | <0.500U | 0.666 | 60.5 | 30 | <100U | 4.25 | 2750 | 523 | 2.68 | <0.500U | 9280 | <0.100U | 40.8 | <0.500U | <1.00U | 852 |
| CSC-104 | Dissolved Metals | ug/L | 67.0 | <0.500U | <0.500U | 12.7 | <0.100U | 7.17 | 6630 | <0.500U | 1.04 | 97.6 | 27 | <100U | 7.06 | 2620 | 656 | 2.44 | <0.500U | 9600 | <0.100U | 42.2 | <0.500U | <1.00U | 1000 |
| CSC-104A | Dissolved Metals | ug/L | 66.5 | <0.500U | <0.500U | 12.8 | <0.100U | 7.07 | 6660 | <0.500U | 1.06 | 102 | 27 | <100U | 7.17 | 2610 | 661 | 2.50 | <0.500U | 9610 | <0.100U | 42.0 | <0.500U | <1.00U | 961 |
| CSC-105 | Dissolved Metals | ug/L | 33.2J | <0.500U | <0.500U | 8.37J | <0.100U | 2.48 | 8050 | <0.500U | 0.134J | 3.86 | 32 | <100U | 0.731 | 2940 | 332 | 3.34 | <0.500U | 8570 | <0.100U | 36.3 | <0.500U | <1.00U | 661 |
| CSC-105 Dup | Dissolved Metals | ug/L | 34.6J | <0.500U | <0.500U | 8.24J | <0.100U | 2.45 | 7980 | <0.500U | 0.134J | 3.85 | 32 | <100U | 0.794 | 2940 | 330 | 3.22 | <0.500U | 8510 | <0.100U | 36.6 | <0.500U | <1.00U | 655 |
| CSC-106 | Dissolved Metals | ug/L | 30.8J | <0.500U | <0.500U | 7.97J | <0.100U | 2.77 | 7660 | <0.500U | 0.285 | 4.62 | 31 | <100U | 1.07 | 2820 | 404 | 3.27 | <0.500U | 7980 | <0.100U | 34.0 | <0.500U | <1.00U | 696 |
| CSC-107 | Dissolved Metals | ug/L | 29.4J | <0.500U | <0.500U | 9.07J | <0.100U | 1.61 | 13100 | <0.500U | 0.188J | 1.41 | 58 | <100U | 0.202 | 6050 | 277 | 10.1 | <0.500U | 8560 | <0.100U | 46.8 | <0.500U | <1.00U | 1120 |
| CSC-108 | Dissolved Metals | ug/L | 20.0J | <0.500U | <0.500U | 10.3 | 0.233 | 11.2 | 12100 | <0.500U | 1.67 | 18.8 | 48 | <100U | 3.92 | 4280 | 1860 | 10.1 | <0.500U | 8720 | 0.272J | 53.6 | <0.500U | <1.00U | 2470 |
| CSC-110/109A | Dissolved Metals | ug/L | 26.9J | <0.500U | <0.500U | 5.71J | <0.100U | <0.100U | 3900 | <0.500U | <0.100U | <0.500U | 16 | <100U | <0.100U | 1400 | 0.720 | <0.500U | <0.500U | 6960 | <0.100U | 20.3 | <0.500U | <1.00U | 6.00 |
| CSC-111 | Dissolved Metals | ug/L | 374 | <0.500U | <0.500U | 8.54J | <0.100U | <0.100U | 5740 | <0.500U | 0.152J | 3.66 | 20 | 217J | 0.115J | 1440 | 14.7 | 0.927J | <0.500U | 21000 | <0.100U | 31.9 | <0.500U | <1.00U | 7.51 |
| CSC-111A | Dissolved Metals | ug/L | 74.9 | <0.500U | <0.500U | 12.0 | <0.100U | 7.01 | 6540 | <0.500U | 1.11 | 104 | 27 | <100U | 7.55 | 2610 | 677 | 2.38 | <0.500U | 9410 | <0.100U | 41.2 | <0.500U | <1.00U | 985 |
| CSC-112 | Dissolved Metals | ug/L | 66.3 | <0.500U | <0.500U | 11.8 | <0.100U | 7.75 | 6670 | 0.500J | 1.32 | 119 | 28 | <100U | 8.09 | 2730 | 803 | 2.73 | <0.500U | 9340 | <0.100U | 41.8 | <0.500U | <1.00U | 1090 |
| CSC-113 | Dissolved Metals | ug/L | 69.1 | <0.500U | <0.500U | 11.4 | <0.100U | 7.92 | 6520 | <0.500U | 1.36 | 121 | 27 | <100U | 8.11 | 2690 | 794 | 2.73 | <0.500U | 9230 | <0.100U | 41.5 | <0.500U | <1.00U | 1100 |
| CSC-113-opp3 | Dissolved Metals | ug/L | 73.7 | <0.500U | <0.500U | 11.2 | <0.100U | 6.34 | 5950 | <0.500U | 1.04 | 97.9 | 25 | <100U | 7.09 | 2520 | 622 | 2.27 | <0.500U | 8910 | <0.100U | 37.9 | <0.500U | <1.00U | 887 |
| CSC-114 | Dissolved Metals | ug/L | 70.4 | <0.500U | <0.500U | 7.32J | <0.100U | 0.418 | 8480 | <0.500U | 0.200 | 8.91 | 28 | 101J | 0.429 | 1680 | 22.5 | 1.05 | <0.500U | 21100 | <0.100U | 51.8 | <0.500U | <1.00U | 109 |
| CSC-115 | Dissolved Metals | ug/L | 25.4J | <0.500U | <0.500U | 23.6 | <0.100U | 0.510 | 14800 | <0.500U | <0.100U | 9.18 | 49 | <100U | 0.196J | 3000 | 15.0 | 1.10 | <0.500U | 20600 | 1.81 | 110 | <0.500U | <1.00U | 139 |
| CSC-116 | Dissolved Metals | ug/L | 45.1J | <0.500U | <0.500U | 9.33J | <0.100U | <0.100U | 4430 | <0.500U | <0.100U | 2.85 | 19 | <100U | 1.22 | 1940 | 0.555 | <0.500U | <0.500U | 8360 | 0.813 | 27.8 | <0.500U | <1.00U | 12.1 |
| CSC-116A | Dissolved Metals | ug/L | 52.2 | <0.500U | <0.500U | 9.68J | <0.100U | 2.24 | 5120 | <0.500U | 0.254 | 37.8 | 22 | <100U | 3.02 | 2180 | 232 | 0.838J | <0.500U | 8500 | 0.392J | 32.2 | <0.500U | <1.00U | 340 |
| CSC-116A_opp2 | Dissolved Metals | ug/L | 76.5 | <0.500U | <0.500U | 10.4 | <0.100U | 8.62 | 6060 | <0.500U | 1.36 | 125 | 26 | <100U | 8.95 | 2670 | 836 | 2.72 | <0.500U | 8540 | <0.100U | 38.9 | <0.500U | <1.00U | 1170 |
| CSC-117 | Dissolved Metals | ug/L | 3840D | <5.00U | <5.00U | <50.0U | 2.79D | 691D | 13100D | <5.00U | 166D | 11800D | 587D | 2700D | 615D | 63300D | 81800D | 209D | 10.2D | 22600D | 3.22JD | 767D | <5.00U | <10.0U | 97000D |
| CSC-117A | Dissolved Metals | ug/L | 5040D | <5.00U | <5.00U | <50.0U | 2.70D | 965D | 15500D | <5.00U | 252D | 17100D | 717D | 10100D | 935D | 80200D | 11800D | 290D | 12.8D | 21400D | 2.62JD | 827D | <5.00U | <10.0U | 129000D |
| CSC-118 | Dissolved Metals | ug/L | 85.6 | <0.500U | <0.500U | 8.64J | <0.100U | 0.155J | 4960 | <0.500U | <0.100U | 13.4 | 19 | <100U | 4.11 | 1580 | 4.62 | <0.500U | <0.500U | 10500 | <0.100U | 27.0 | <0.500U | <1.00U | 31.7 |
| CSC-119 | Dissolved Metals | ug/L | 30.7J | <0.500U | <0.500U | 16.5 | <0.100U | 0.575 | 7660 | <0.500U | <0.100U | 9.95 | 27 | <100U | 6.58 | 1800 | 4.23 | <0.500U | <0.500U | 13900 | <0.100U | 55.1 | <0.500U | <1.00U | 48.3 |
| CSC-119 Dup | Dissolved Metals | ug/L | 27 | | | | | | | | | | | | | | | | | | | | | | |

Table 5.0-2 Carpenter-Snow Creek Total Metals Analytical Results and RPD Calculations- June 2011

| STATION_ID | ANALYSIS | UNITS | Aluminum | Antimony | Arsenic | Barium | Beryllium | Cadmium | Calcium | Chromium | Cobalt | Copper | Iron | Lead | Magnesium | Manganese | Mercury | Nickel | Selenium | Silica (SiO2) | Silver | Strontium | Thallium | Vanadium | Zinc | |
|---------------|--------------|-------|----------|----------|---------|--------|-----------|---------|---------|----------|---------|--------|--------|--------|-----------|-----------|---------|---------|----------|---------------|-------------|-----------|----------|----------|---------|-------|
| CSC-101 | Total Metals | ug/L | 242 | <2.50U | <2.50U | 69.7D | <0.500U | 1.20D | 13900 | 2.70JD | <0.500U | 15.9D | 229J | 6.60D | 3600 | 99.1D | <0.100U | <2.50U | <2.50U | 7850 | 1.25JD | 102 | 6.20D | <5.00U | 160D | |
| CSC-102 | Total Metals | ug/L | 259 | <2.50U | <2.50U | 82.5D | <0.500U | <0.500U | 15500 | <2.50U | <0.500U | <2.50U | 202J | 1.20JD | 3820 | 12.4D | <0.100U | <2.50U | <2.50U | 7720 | <0.500U | 115 | <2.50U | <5.00U | 27.6D | |
| CSC-103 | Total Metals | ug/L | 216 | <2.50U | <2.50U | <25.0U | <0.500U | 5.23D | 7510 | 2.76JD | 0.746JD | 83.1D | 282 | 33.3D | 2810 | 520D | <0.100U | 3.33JD | <2.50U | 9630 | <0.500U | 42.2 | <2.50U | <5.00U | 791D | |
| CSC-103A | Total Metals | ug/L | 199 | <2.50U | <2.50U | <25.0U | <0.500U | 5.41D | 7320 | 2.87JD | 0.762JD | 81.1D | 246J | 27.1D | 2770 | 513D | <0.100U | 2.82JD | <2.50U | 9480 | <0.500U | 41.0 | <2.50U | <5.00U | 800D | |
| CSC-104 | Total Metals | ug/L | 182 | <2.50U | <2.50U | <25.0U | <0.500U | 6.88D | 6670 | 3.42JD | 1.06D | 114D | 172J | 23.9D | 2630 | 649D | <0.100U | 2.75JD | <2.50U | 9680 | <0.500U | 42.0 | <2.50U | <5.00U | 902D | |
| CSC-104A | Total Metals | ug/L | 175 | <2.50U | <2.50U | <25.0U | <0.500U | 7.02D | 6570 | 3.07JD | 1.07D | 118D | 219J | 24.3D | 2600 | 647D | <0.100U | 2.52JD | <2.50U | 9630 | <0.500U | 41.9 | <2.50U | <5.00U | 892D | |
| CSC-105 | Total Metals | ug/L | 157 | <2.50U | <2.50U | <25.0U | <0.500U | 2.87D | 8050 | 3.55JD | <0.500U | 7.78JD | 193J | 8.36D | 2970 | 473D | <0.100U | 4.09JD | <2.50U | 8740 | <0.500U | 36.9 | <2.50U | <5.00U | 649D | |
| CSC-105 Dup | Total Metals | ug/L | 141 | <2.50U | <2.50U | <25.0U | <0.500U | 2.28D | 8140 | 2.55JD | <0.500U | 5.13JD | 190J | 9.46D | 3000 | 318D | <0.100U | 3.67JD | <2.50U | 8750 | <0.500U | 37.0 | <2.50U | <5.00U | 618D | |
| CSC-106 | Total Metals | ug/L | 204 | <2.50U | <2.50U | <25.0U | <0.500U | 2.83D | 7400 | 3.39JD | <0.500U | 8.02JD | 343 | 12.7D | 2750 | 422D | <0.100U | 3.62JD | <2.50U | 8150 | <0.500U | 34.2 | <2.50U | <5.00U | 662D | |
| CSC-107 | Total Metals | ug/L | 89.4 | <2.50U | <2.50U | <25.0U | <0.500U | 1.61D | 12700 | 2.81JD | <0.500U | <2.50U | <100U | 3.48D | 5850 | 300D | <0.100U | 11.6D | <2.50U | 8290 | <0.500U | 46.0 | <2.50U | <5.00U | 1000D | |
| CSC-108 | Total Metals | ug/L | 389 | <2.50U | 3.04JD | <25.0U | <0.500U | 10.7D | 11900 | 3.39JD | 1.78D | 37.3D | 737 | 50.7D | 4240 | 1910D | <0.100U | 10.7D | <2.50U | 8830 | <0.500U | 53.8 | <2.50U | <5.00U | 2210D | |
| CSC-110/109A | Total Metals | ug/L | 176 | <2.50U | <2.50U | <25.0U | <0.500U | <0.500U | 3910 | 3.16JD | <0.500U | <2.50U | 235J | 2.17D | 1430 | 7.33D | <0.100U | <2.50U | <2.50U | 7240 | <0.500U | 20.5 | <2.50U | <5.00U | 11.4JD | |
| CSC-111 | Total Metals | ug/L | 1020 | <2.50U | <2.50U | <25.0U | <0.500U | <0.500U | 5660 | 3.16JD | <0.500U | 4.62JD | 792 | 1.81JD | 1500 | 14.9D | <0.100U | <2.50U | <2.50U | 22400 | <0.500U | 32.4 | <2.50U | <5.00U | <10.0U | |
| CSC-111A | Total Metals | ug/L | 165 | <2.50U | <2.50U | <25.0U | <0.500U | 6.62D | 6440 | 2.58JD | 1.06D | 116D | 159J | 28.0D | 2610 | 644D | <0.100U | 2.56JD | <2.50U | 9430 | <0.500U | 41.4 | <2.50U | <5.00U | 892D | |
| CSC-112 | Total Metals | ug/L | 165 | <2.50U | <2.50U | <25.0U | <0.500U | 7.10D | 6540 | 2.89JD | 1.30D | 134D | 171J | 32.6D | 2700 | 725D | <0.100U | 2.59JD | <2.50U | 9290 | <0.500U | 41.6 | <2.50U | <5.00U | 990D | |
| CSC-113 | Total Metals | ug/L | 172 | <2.50U | <2.50U | <25.0U | <0.500U | 7.71D | 6460 | 3.44JD | 1.38D | 139D | 160J | 26.2D | 2690 | 768D | <0.100U | 2.70JD | <2.50U | 9150 | <0.500U | 41.6 | <2.50U | <5.00U | 982D | |
| CSC-113-opp3 | Total Metals | ug/L | 175 | <2.50U | <2.50U | <25.0U | <0.500U | 6.59D | 5880 | 3.11JD | 0.981JD | 113D | 155J | 25.4D | 2490 | 587D | <0.100U | <2.50U | <2.50U | 8840 | <0.500U | 38.2 | <2.50U | <5.00U | 780D | |
| CSC-114 | Total Metals | ug/L | 378 | <2.50U | <2.50U | <25.0U | <0.500U | <0.500U | 8310 | 3.35JD | <0.500U | 11.5D | 358 | 2.85D | 1690 | 27.8D | <0.100U | <2.50U | <2.50U | 21800 | 1.23JD | 52.4 | 4.40JD | <5.00U | 106D | |
| CSC-115 | Total Metals | ug/L | 155 | <2.50U | <2.50U | 25.0JD | <0.500U | 0.550JD | 14700 | 2.66JD | <0.500U | 12.6D | 164J | 2.21D | 2990 | 19.3D | <0.100U | <2.50U | <2.50U | 20500 | <0.500U | 111 | <2.50U | <5.00U | 134D | |
| CSC-116 | Total Metals | ug/L | 115 | <2.50U | <2.50U | <25.0U | <0.500U | <0.500U | 4460 | 3.42JD | <0.500U | 4.96JD | <100U | 5.24D | 1940 | 3.04D | <0.100U | <2.50U | <2.50U | 8390 | <0.500U | 28.2 | <2.50U | <5.00U | 14.9JD | |
| CSC-116A | Total Metals | ug/L | 140 | <2.50U | <2.50U | <25.0U | <0.500U | 1.89D | 4940 | 2.66JD | <0.500U | 41.8D | 111J | 10.8D | 2130 | 200D | <0.100U | <2.50U | <2.50U | 8480 | <0.500U | 31.9 | <2.50U | <5.00U | 286D | |
| CSC-116A_OPP2 | Total Metals | ug/L | 192 | <2.50U | <2.50U | <25.0U | <0.500U | <0.500U | 8.39D | 6100 | 3.08JD | 1.48D | 156D | 178J | 31.7D | 2690 | 868D | <0.100U | 3.17JD | <2.50U | 8620 | <0.500U | 39.6 | <2.50U | <5.00U | 1050D |
| CSC-117 | Total Metals | ug/L | 3820D | <5.00U | <5.00U | <50.0U | 4.15D | 677D | 130000D | <5.00U | 169D | 12900D | 3110D | 625D | 63300D | 79100D | <0.100U | 225D | 5.94JD | 22400D | <1.00U | 766D | <5.00U | <10.0U | 87800D | |
| CSC-117A | Total Metals | ug/L | 5140D | <5.00U | <5.00U | <50.0U | 4.52D | 979D | 156000D | <5.00U | 246D | 17400D | 10700D | 952D | 81100D | 109000D | <0.100U | 291D | 11.3D | 21600D | 1.58JD | 830D | <5.00U | <10.0U | 124000D | |
| CSC-118 | Total Metals | ug/L | 223 | <2.50U | <2.50U | <25.0U | <0.500U | <0.500U | 5060 | <2.50U | <0.500U | 66.0D | 408 | 130D | 1620 | 36.5D | <0.100U | <2.50U | <2.50U | 10800 | <0.500U | 27.8 | <2.50U | <5.00U | 45.5D | |
| CSC-119 | Total Metals | ug/L | 125 | <2.50U | <2.50U | <25.0U | <0.500U | 0.560JD | 7720 | 2.75JD | <0.500U | 23.9D | 220J | 48.9D | 1830 | 17.5D | <0.100U | <2.50U | <2.50U | 13900 | <0.500U</td | | | | | |

Table 5.0-3 Carpenter-Snow Creek Wet Chemistry, Alkalinity, and DOC Analytical Results - June 2011

| STATION_ID | ANALYSIS | UNITS | Chloride | Sulfate as SO ₄ | Dissolved Organic Carbon | Total Alkalinity (mg CaCO ₃ /L) |
|---------------|---------------------------------|-------|----------|----------------------------|--------------------------|--|
| CSC-101 | Wet Chem, DOC, Total Alkalinity | mg/L | <1.0U | 5.7 | 2.5 | 48.8 |
| CSC-102 | Wet Chem, DOC, Total Alkalinity | mg/L | 1.0J | 3.4J | 2.4 | 54.0 |
| CSC-103 | Wet Chem, DOC, Total Alkalinity | mg/L | <1.0U | 17.1 | 2.5 | 17.6 |
| CSC-103A | Wet Chem, DOC, Total Alkalinity | mg/L | <1.0U | 16.8 | 2.4 | 17.3 |
| CSC-104 | Wet Chem, DOC, Total Alkalinity | mg/L | <1.0U | 14.3 | 2.7 | 19.6 |
| CSC-104A | Wet Chem, DOC, Total Alkalinity | mg/L | <1.0U | 22.1 | 2.7 | 19.0 |
| CSC-105 | Wet Chem, DOC, Total Alkalinity | mg/L | <1.0U | 21.0 | 1.8 | 13.2 |
| CSC-105 Dup | Wet Chem, DOC, Total Alkalinity | mg/L | <1.0U | 22.1 | 1.9 | 12.9 |
| CSC-106 | Wet Chem, DOC, Total Alkalinity | mg/L | <1.0U | 56.1 | 1.7 | 12.3 |
| CSC-107 | Wet Chem, DOC, Total Alkalinity | mg/L | <1.0U | 49.6 | 1.2 | <5.00U |
| CSC-108 | Wet Chem, DOC, Total Alkalinity | mg/L | <1.0U | 3.2J | 1.0 | 5.83 |
| CSC-110/109A | Wet Chem, DOC, Total Alkalinity | mg/L | <1.0U | 10.6 | 2.1 | 16.0 |
| CSC-111 | Wet Chem, DOC, Total Alkalinity | mg/L | <1.0U | 13.5 | 4.6 | 17.4 |
| CSC-111A | Wet Chem, DOC, Total Alkalinity | mg/L | <1.0U | 14.3 | 2.9 | 18.7 |
| CSC-112 | Wet Chem, DOC, Total Alkalinity | mg/L | <1.0U | 13.9 | 2.7 | 19.5 |
| CSC-113 | Wet Chem, DOC, Total Alkalinity | mg/L | <1.0U | 11.6 | 2.6 | 18.8 |
| CSC-113-opp3 | Wet Chem, DOC, Total Alkalinity | mg/L | <1.0U | 19.8 | 2.7 | 18.4 |
| CSC-114 | Wet Chem, DOC, Total Alkalinity | mg/L | <1.0U | 27.7 | 3.3 | 15.3 |
| CSC-115 | Wet Chem, DOC, Total Alkalinity | mg/L | <1.0U | 3.0J | 2.4 | 28.7 |
| CSC-116 | Wet Chem, DOC, Total Alkalinity | mg/L | <1.0U | 6.1 | 2.8 | 20.2 |
| CSC-116A | Wet Chem, DOC, Total Alkalinity | mg/L | <1.0U | 6.2 | 2.7 | 20.3 |
| CSC-116A_OPP2 | Wet Chem, DOC, Total Alkalinity | mg/L | <1.0U | 13.3 | 2.7 | 18.7 |
| CSC-117 | Wet Chem, DOC, Total Alkalinity | mg/L | <10.0U | 909D | 1.4 | <5.00U |
| CSC-117A | Wet Chem, DOC, Total Alkalinity | mg/L | <10.0U | 1220D | 1.5 | <5.00U |
| CSC-118 | Wet Chem, DOC, Total Alkalinity | mg/L | <1.0U | 4.8J | 2.7 | 19.1 |
| CSC-119 | Wet Chem, DOC, Total Alkalinity | mg/L | <1.0U | 9.7 | 2.1 | 22.7 |
| CSC-119 Dup | Wet Chem, DOC, Total Alkalinity | mg/L | <1.0U | 9.7 | 2.2 | 23.2 |
| CSC-120 | Wet Chem, DOC, Total Alkalinity | mg/L | <1.0U | 2.6J | 2.8 | 19.0 |
| CSC-120A | Wet Chem, DOC, Total Alkalinity | mg/L | <1.0U | 2.7J | 2.9 | 20.0 |
| FB-01 | Wet Chem, DOC, Total Alkalinity | mg/L | <1.0U | <2.0U | <1.0U | <5.00U |
| FB-02 | Wet Chem, DOC, Total Alkalinity | mg/L | <1.0U | <2.0U | <1.0U | <5.00U |
| FB-03 | Wet Chem, DOC, Total Alkalinity | mg/L | <1.0U | <2.0U | <1.0U | <5.00U |
| ST004 | Wet Chem, DOC, Total Alkalinity | mg/L | <1.0U | 3.2J | 2.3 | 53.2 |
| ST005 | Wet Chem, DOC, Total Alkalinity | mg/L | <1.0U | 3.3J | 2.3 | 53.7 |
| ST005A | Wet Chem, DOC, Total Alkalinity | mg/L | 1.1J | 60.5 | 2.5 | 39.1 |
| ST005B | Wet Chem, DOC, Total Alkalinity | mg/L | <1.0U | 37.0 | 2.9 | 34.8 |
| ST008 | Wet Chem, DOC, Total Alkalinity | mg/L | <1.0U | 2.9J | 2.4 | 54.5 |
| ST009 | Wet Chem, DOC, Total Alkalinity | mg/L | <10.0U | 217D | 1.2 | 30.8 |
| ST009A | Wet Chem, DOC, Total Alkalinity | mg/L | 2.2 | 4.0J | 2.5 | 33.8 |
| ST009B | Wet Chem, DOC, Total Alkalinity | mg/L | 1.9J | 47.3 | 2.3 | 34.4 |
| ST010 | Wet Chem, DOC, Total Alkalinity | mg/L | 1.0J | 2.9J | 2.1 | 55.6 |
| ST010A | Wet Chem, DOC, Total Alkalinity | mg/L | 1.0J | 2.9J | 2.1 | 58.9 |
| ST010A Dup | Wet Chem, DOC, Total Alkalinity | mg/L | 1.0J | 2.8J | 2.1 | 57.4 |
| ST014 | Wet Chem, DOC, Total Alkalinity | mg/L | 1.0J | 3.4J | 2.3 | 54.1 |
| ST015 | Wet Chem, DOC, Total Alkalinity | mg/L | <1.0U | 96.2 | 1.1 | 6.44 |
| ST015A | Wet Chem, DOC, Total Alkalinity | mg/L | 1.0J | 4.6J | 2.3 | 52.7 |
| ST016 | Wet Chem, DOC, Total Alkalinity | mg/L | 1.0J | 181 | 2.2 | 39.0 |
| ST016A | Wet Chem, DOC, Total Alkalinity | mg/L | 1.0J | 3.1J | 2.3 | 55.2 |

Note: Data Qualifier Definitions Listed Below:

D The analyte was diluted prior to analysis.

U The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

UJ The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise

Table 5.0-4 Carpenter Snow Creek Dissolved Metals Analytical Results and RPD Calculations - September 2011

| STATION_ID | ANALYSIS | UNITS | Aluminum | Antimony | Arsenic | Barium | Beryllium | Cadmium | Calcium | Chromium | Cobalt | Copper | Hardness (mg/L) | Iron | Lead | Magnesium | Manganese | Nickel | Selenium | Silica (SiO2) | Silver | Strontium | Thallium | Vanadium | Zinc |
|--------------|------------------|-------|----------|----------|---------|--------|-----------|---------|---------|----------|---------|--------|-----------------|--------|---------|-----------|-----------|---------|----------|---------------|---------|-----------|----------|----------|---------|
| CSC-101 | Dissolved Metals | ug/L | <20.0U | <0.500U | 0.790J | 107 | <2.00U | 0.767 | 20200 | 1.34 | <0.100U | 3.52 | 78 | <100U | 0.227 | 6630 | 26.4 | <0.500U | <0.500U | 8180 | <0.500U | 179 | <0.500U | <1.00U | 153 |
| CSC-101 Dup | Dissolved Metals | ug/L | <20.0U | <0.500U | 0.800J | 107 | <2.00U | 0.740 | 20400 | 1.15 | <0.100U | 3.13 | 78 | <100U | 0.231 | 6610 | 26.7 | <0.500U | <0.500U | 8280 | <0.500U | 179 | <0.500U | <1.00U | 158 |
| CSC-102 | Dissolved Metals | ug/L | <20.0U | <0.500U | 0.954J | 115 | <2.00U | <0.100U | 20100 | 1.83 | <0.100U | <2.00U | 77 | <100U | 0.135J | 6610 | 11.4 | <0.500U | <0.500U | 7650 | <0.500U | 185 | <0.500U | <1.00U | 25.0 |
| CSC-103 | Dissolved Metals | ug/L | <20.0U | <0.500U | <0.500U | 34.7 | <2.00U | 6.77 | 20600 | 0.666J | <0.100U | 25.4 | 77 | <100U | 1.46 | 6290 | 176 | 3.54 | <0.500U | 13400 | <0.500U | 124 | <0.500U | <1.00U | 1260 |
| CSC-103A | Dissolved Metals | ug/L | <20.0U | <0.500U | <0.500U | 31.5 | <2.00U | 9.24 | 20300 | 0.537J | <0.100U | 39.2 | 77 | <100U | 1.97 | 6310 | 389 | 4.44 | <0.500U | 13900 | <0.500U | 124 | <0.500U | <1.00U | 1500 |
| CSC-104 | Dissolved Metals | ug/L | 20.2J | <0.500U | <0.500U | 32.9 | <2.00U | 12.5 | 21300 | 0.530J | 0.155J | 59.3 | 81 | <100U | 3.61 | 6680 | 644 | 5.96 | <0.500U | 14200 | <0.500U | 133 | <0.500U | <1.00U | 1960 |
| CSC-104A | Dissolved Metals | ug/L | 23.3J | <0.500U | <0.500U | 43.4 | <2.00U | 19.0 | 25200 | 0.512J | 0.382 | 92.5 | 94 | <100U | 5.79 | 7530 | 1040 | 7.62 | <0.500U | 15500 | <0.500U | 171 | <0.500U | <1.00U | 2780 |
| CSC-105 | Dissolved Metals | ug/L | <20.0U | <0.500U | <0.500U | 13.6 | <2.00U | 1.13 | 14500 | <0.500U | <0.100U | <2.00U | 58 | <100U | <0.100U | 5300 | 6.92 | 2.44 | <0.500U | 11900 | <0.500U | 66.1 | <0.500U | <1.00U | 502 |
| CSC-106 | Dissolved Metals | ug/L | <20.0U | <0.500U | <0.500U | 13.2 | <2.00U | 1.16 | 14600 | <0.500U | <0.100U | <2.00U | 58 | <100U | 0.104J | 5320 | 12.6 | 2.65 | <0.500U | 11900 | <0.500U | 66.4 | <0.500U | <1.00U | 502 |
| CSC-107 | Dissolved Metals | ug/L | 108 | <0.500U | <0.500U | 20.2 | <2.00U | 4.32 | 40900 | <0.500U | <0.100U | 3.55 | 179 | <100U | 1.41 | 18600 | 148 | 32.5 | 0.526J | 14300 | <0.500U | 152 | <0.500U | <1.00U | 3720 |
| CSC-108 | Dissolved Metals | ug/L | <20.0U | <0.500U | <0.500U | 22.1 | <2.00U | 7.45 | 24200 | 1.14 | <0.100U | 3.15 | 95 | <100U | 0.633 | 8490 | 6.63 | 9.92 | <0.500U | 12900 | <0.500U | 105 | <0.500U | <1.00U | 2470 |
| CSC-110/109A | Dissolved Metals | ug/L | <20.0U | <0.500U | <0.500U | 7.98 | <2.00U | <0.100U | 7340 | 0.607J | <0.100U | <2.00U | 28 | <100U | <0.100U | 2400 | <2.00U | <0.500U | <0.500U | 9080 | <0.500U | 41.0 | <0.500U | <1.00U | <10.0U |
| CSC-111A | Dissolved Metals | ug/L | 28.0J | <0.500U | <0.500U | 40.4 | <2.00U | 22.3 | 22500 | <0.500U | 0.482 | 113 | 87 | <100U | 9.14 | 7400 | 1260 | 7.94 | 0.644J | 14900 | <0.500U | 160 | <0.500U | <1.00U | 3080 |
| CSC-112 | Dissolved Metals | ug/L | 38.0J | <0.500U | <0.500U | 38.0 | <2.00U | 22.4 | 22000 | <0.500U | 0.526 | 137 | 85 | <100U | 11.3 | 7320 | 1370 | 8.34 | 0.588J | 14800 | <0.500U | 159 | <0.500U | <1.00U | 3250 |
| CSC-113 | Dissolved Metals | ug/L | 55.4 | <0.500U | <0.500U | 37.0 | <2.00U | 23.2 | 21500 | <0.500U | 0.219 | 159 | 83 | <100U | 13.1 | 7090 | 1220 | 8.15 | <0.500U | 14700 | <0.500U | 157 | <0.500U | <1.00U | 3350 |
| CSC-114 | Dissolved Metals | ug/L | <20.0U | <0.500U | <0.500U | 10.5 | <2.00U | 0.691 | 20300 | <0.500U | <0.100U | 5.79 | 65 | <100U | <0.100U | 3410 | 27.7 | 1.04 | <0.500U | 27000 | <0.500U | 133 | <0.500U | <1.00U | 215 |
| CSC-115 | Dissolved Metals | ug/L | <20.0U | <0.500U | <0.500U | 31.3 | <2.00U | 0.394 | 21400 | 3.85 | <0.100U | 5.07 | 70 | <100U | <0.100U | 4010 | 24.6 | 0.939J | <0.500U | 24800 | <0.500U | 175 | <0.500U | <1.1J | 153 |
| CSC-116 | Dissolved Metals | ug/L | <20.0U | <0.500U | <0.500U | 22.0 | <2.00U | 0.606 | 9560 | 0.887J | <0.100U | 8.25 | 38 | <100U | 4.78 | 3450 | <2.00U | <0.500U | <0.500U | 10300 | <0.500U | 64.7 | <0.500U | <1.00U | 63.1 |
| CSC-116A | Dissolved Metals | ug/L | 115 | <0.500U | <0.500U | 24.6 | <2.00U | 17.0 | 15100 | 0.602J | <0.100U | 208 | 60 | <100U | 19.6 | 5420 | 1380 | 5.68 | <0.500U | 11400 | <0.500U | 108 | <0.500U | <1.00U | 2640 |
| CSC-116A Dup | Dissolved Metals | ug/L | 119 | <0.500U | <0.500U | 25.2 | <2.00U | 17.2 | 15100 | <0.500U | <0.100U | 211 | 60 | <100U | 19.7 | 5420 | 1390 | 5.34 | <0.500U | 11500 | <0.500U | 108 | <0.500U | <1.00U | 2660 |
| CSC-117 | Dissolved Metals | ug/L | 4220D | <5.00U | <5.00U | <20.0U | <20.0U | 675D | 177000D | <5.00U | 132D | 9310D | 757D | 1430JD | 555D | 76300D | 87400D | 224D | 12.3D | 28400D | <5.00U | 1280D | <5.00U | <10.0U | 111000D |
| CSC-117A | Dissolved Metals | ug/L | 6100D | <5.00U | <5.00U | <20.0U | <20.0U | 1070D | 239000D | <5.00U | 292D | 14900D | 1060D | 10200D | 1310D | 113000D | 152000D | 357D | 16.7D | 26600D | <5.00U | 1610D | <5.00U | <10.0U | 181000D |
| CSC-118 | Dissolved Metals | ug/L | <20.0U | <0.500U | <0.500U | 22.0 | <2.00U | 1.29 | 11500 | 0.571J | <0.100U | 9.28 | 43 | <100U | 2.77 | 3400 | 15.5 | <0.500U | <0.500U | 11400 | <0.500U | 67.8 | <0.500U | <1.00U | 251 |
| CSC-119 | Dissolved Metals | ug/L | <20.0U | <0.500U | <0.500U | 49.2 | <2.00U | 3.23 | 21400 | 0.568J | <0.100U | 31.0 | 73 | <100U | 20.7 | 4710 | 15.2 | <0.500U | <0.500U | 16700 | <0.500U | 155 | <0.500U | <1.00U | 220 |
| CSC-120 | Dissolved Metals | ug/L | <20.0U | <0.500U | <0.500U | 13.3 | <2.00U | <0.100U | 8080 | 0.669J | <0.100U | <2.00U | 34 | <100U | <0.100U | 3420 | 2.11J | <0.500U | <0.500U | 9880 | <0.500U | 53.3 | <0.500U | <1.00U | <10.0U |
| CSC-120A | Dissolved Metals | ug/L | <20.0U | <0.500U | <0.500U | 12.9 | <2.00U | <0.100U | 8850 | 0.622J | <0.100U | <2.00U | 36 | <100U | 0.224 | 3330 | <2.00U | <0.500U | <0.50 | | | | | | |

Table 5.0-5 Carpenter Snow Creek Total Metals Analytical Results and RPD Calculations - September 2011

| STATION_ID | ANALYSIS | UNITS | Aluminum | Antimony | Arsenic | Barium | Beryllium | Cadmium | Calcium | Chromium | Cobalt | Copper | Iron | Lead | Magnesium | Manganese | Nickel | Selenium | Silica (SiO2) | Silver | Strontium | Thallium | Vanadium | Zinc |
|--------------|--------------|-------|----------|----------|---------|--------|-----------|---------|---------|----------|---------|--------|--------|---------|-----------|-----------|--------|----------|---------------|--------|-----------|----------|----------|---------|
| CSC-101 | Total Metals | ug/L | 22.0J | <2.50U | <2.50U | 110 | <2.00U | 0.749JD | 21000 | <2.50U | <0.500U | 5.17 | <100U | 0.629JD | 6790 | 30.1 | <2.50U | <2.50U | 8080 | <2.50U | 181 | <2.50U | <5.00U | 151 |
| CSC-101 Dup | Total Metals | ug/L | <20.0U | <2.50U | <2.50U | 114 | <2.00U | 0.823JD | 21500 | 2.81JD | <0.500U | 4.92 | <100U | 0.671JD | 7050 | 29.1 | <2.50U | <2.50U | 8410 | <2.50U | 189 | <2.50U | <5.00U | 151 |
| CSC-102 | Total Metals | ug/L | <20.0U | <2.50U | <2.50U | 119 | <2.00U | <0.500U | 21000 | <2.50U | <0.500U | <2.00U | <100U | 0.548JD | 6860 | 14.3 | <2.50U | <2.50U | 7580 | <2.50U | 188 | 6.68D | <5.00U | 29.2 |
| CSC-103 | Total Metals | ug/L | <20.0U | <2.50U | <2.50U | 36.6 | <2.00U | 6.55D | 21600 | <2.50U | <0.500U | 30.4 | <100U | 2.73D | 6530 | 180 | 3.21JD | <2.50U | 13200 | <2.50U | 127 | <2.50U | <5.00U | 1220 |
| CSC-103A | Total Metals | ug/L | 39.9J | <2.50U | <2.50U | 33.8 | <2.00U | 8.45D | 21100 | <2.50U | <0.500U | 59.7 | <100U | 10.7D | 6520 | 404 | 4.50JD | <2.50U | 13700 | <2.50U | 126 | <2.50U | <5.00U | 1470 |
| CSC-104 | Total Metals | ug/L | 2700 | <2.50U | <2.50U | 486 | <2.00U | 12.0D | 22100 | 2.85JD | 7.25D | 1790 | 14100 | 7.41D | 8270 | 3660 | 5.75D | <2.50U | 23600 | <2.50U | 154 | <2.50U | <5.00U | 3380 |
| CSC-104A | Total Metals | ug/L | 53.8 | <2.50U | <2.50U | 44.9 | <2.00U | 17.7D | 26000 | <2.50U | <0.500U | 122 | <100U | 12.1D | 7730 | 1060 | 7.34D | <2.50U | 15100 | <2.50U | 173 | <2.50U | <5.00U | 2650 |
| CSC-105 | Total Metals | ug/L | <20.0U | <2.50U | <2.50U | 14.8 | <2.00U | 1.11D | 15300 | 2.70JD | <0.500U | 2.73 | <100U | 0.669JD | 5490 | 8.43 | 2.61JD | <2.50U | 11800 | <2.50U | 67.4 | <2.50U | <5.00U | 482 |
| CSC-106 | Total Metals | ug/L | 24.8J | <2.50U | <2.50U | 14.4 | <2.00U | 1.24D | 15300 | <2.50U | <0.500U | 2.35 | 101J | <0.500U | 5550 | 14.2 | <2.50U | <2.50U | 11900 | <2.50U | 67.9 | <2.50U | <5.00U | 489 |
| CSC-107 | Total Metals | ug/L | 121 | <2.50U | <2.50U | 21.6 | <2.00U | 4.10D | 42000 | 2.73JD | <0.500U | 3.66 | <100U | 1.96D | 19100 | 151 | 34.7D | <2.50U | 14000 | <2.50U | 153 | <2.50U | <5.00U | 3580 |
| CSC-108 | Total Metals | ug/L | 21.7J | <2.50U | <2.50U | 23.1 | <2.00U | 6.79D | 24900 | 3.87JD | <0.500U | 3.33 | <100U | 1.48D | 8750 | 7.24 | 10.8D | <2.50U | 12600 | <2.50U | 107 | <2.50U | <5.00U | 2350 |
| CSC-109A | Total Metals | ug/L | 640 | <2.50U | <2.50U | 86.0 | <2.00U | 17.8D | 26000 | 3.05JD | 1.61D | 425 | 2630 | 946D | 8000 | 1120 | 8.86D | <2.50U | 17900 | <2.50U | 181 | <2.50U | <5.00U | 2930 |
| CSC-110/109A | Total Metals | ug/L | <20.0U | <2.50U | <2.50U | 8.99 | <2.00U | <0.500U | 7630 | 2.98JD | <0.500U | <2.00U | <100U | <0.500U | 2480 | <2.00U | <2.50U | <2.50U | 8950 | <2.50U | 41.8 | <2.50U | <5.00U | <10.0U |
| CSC-111A | Total Metals | ug/L | 68.2 | <2.50U | <2.50U | 40.9 | <2.00U | 20.8D | 22900 | 2.51JD | 0.551JD | 145 | <100U | 14.5D | 7560 | 1260 | 8.64D | <2.50U | 14400 | <2.50U | 161 | <2.50U | <5.00U | 2890 |
| CSC-112 | Total Metals | ug/L | 83.5 | <2.50U | <2.50U | 39.4 | <2.00U | 21.9D | 22800 | 2.50JD | 0.604JD | 175 | <100U | 17.1D | 7590 | 1380 | 9.31D | <2.50U | 14700 | <2.50U | 162 | 6.23D | <5.00U | 3110 |
| CSC-113 | Total Metals | ug/L | 96.9 | <2.50U | <2.50U | 38.6 | <2.00U | 21.3D | 22600 | 2.50JD | <0.500U | 199 | <100U | 21.4D | 7340 | 1240 | 8.66D | <2.50U | 14500 | <2.50U | 160 | 3.70JD | <5.00U | 3210 |
| CSC-114 | Total Metals | ug/L | <20.0U | <2.50U | <2.50U | 11.4 | <2.00U | 0.526JD | 20900 | 3.01JD | <0.500U | 6.56 | <100U | 1.09D | 3520 | 62.5 | <2.50U | <2.50U | 26400 | <2.50U | 135 | <2.50U | <5.00U | 204 |
| CSC-115 | Total Metals | ug/L | <20.0U | <2.50U | <2.50U | 27.3 | <2.00U | <0.500U | 22600 | 2.54JD | <0.500U | 7.56 | <100U | 0.658JD | 4230 | 19.6 | <2.50U | <2.50U | 24600 | <2.50U | 172 | <2.50U | <5.00U | 130 |
| CSC-116 | Total Metals | ug/L | <20.0U | <2.50U | <2.50U | 23.1 | <2.00U | 0.500JD | 9750 | <2.50U | <0.500U | 9.48 | <100U | 6.15D | 3540 | <2.00U | <2.50U | <2.50U | 10100 | <2.50U | 65.0 | <2.50U | <5.00U | 56.1 |
| CSC-116A | Total Metals | ug/L | 132 | <2.50U | <2.50U | 26.0 | <2.00U | 16.4D | 15400 | 2.74JD | <0.500U | 222 | <100U | 23.1D | 5580 | 1400 | 6.39D | <2.50U | 11200 | <2.50U | 109 | <2.50U | <5.00U | 2460 |
| CSC-116A Dup | Total Metals | ug/L | 139 | <2.50U | <2.50U | 26.5 | <2.00U | 16.5D | 15800 | 2.82JD | <0.500U | 228 | <100U | 21.0D | 5750 | 1430 | 6.30D | <2.50U | 11600 | <2.50U | 113 | <2.50U | <5.00U | 2540 |
| CSC-117 | Total Metals | ug/L | 4390D | <5.00U | <5.00U | <20.0U | <20.0U | 673D | 183000D | <5.00U | 140D | 9430D | 1550JD | 579D | 79100D | 88700D | 239D | 11.6D | 27800D | <5.00U | 1300D | <5.00U | <10.0U | 110000D |
| CSC-117A | Total Metals | ug/L | 6320D | <5.00U | <5.00U | <20.0U | <20.0U | 1080D | 249000D | <5.00U | 311D | 15300D | 11000D | 1340D | 118000D | 155000D | 369D | 14.0D | 26600D | <5.00U | 1640D | <5.00U | <10.0U | 180000D |
| CSC-118 | Total Metals | ug/L | <20.0U | <2.50U | <2.50U | 22.9 | <2.00U | 1.19D | 11700 | <2.50U | <0.500U | 9.15 | <100U | 5.43D | 3490 | 3.18J | <2.50U | <2.50U | 11100 | <2.50U | 68.4 | <2.50U | <5.00U | 206 |
| CSC-119 | Total Metals | ug/L | 46.7J | <2.50U | <2.50U | 59.1 | <2.00U | 3.12D | 21800 | <2.50U | <0.500U | 82.7 | 315 | 189D | 4840 | 48.5 | <2.50U | <2.50U | 16300 | <2.50U | 157 | <2.50U | <5.00U | 210 |
| CSC-120 | Total Metals | ug/L | <20.0U | <2.50U | <2.50U | 14.1 | <2.00U | <0.500U | 8320 | <2.50U | <0.500U | 2.96 | <100U | <0.500U | 3550 | 17.1 | <2.50U | <2.50U | 9650 | <2.50U | 54.4 | <2.50U | <5.00U | 22.4 |
| CSC-120A | Total Metals | ug/L | <20.0U | <2.50U | <2.50U | 14.0 | <2.00U | <0.500U | 9070 | 2.63JD | <0.500U | <2.00U | <100U | 0.597JD | 3450 | <2.00U | <2.50U | 9910 | <2.50U | 59.8 | <2.50U | <5.00U | <10.0U | |
| CSC-Opp-1 | Total Metals | ug/L | 159 | <2.50U | <2.50U | | | | | | | | | | | | | | | | | | | |

Table 5.0-6 Carpenter-Snow Creek Total Metals Sediment Analytical Data - September 2011

| STATION_ID | ANALYSIS | UNITS | Antimony | Arsenic | Cadmium | Chromium | Cobalt | Lead | Nickel | Selenium | Silver | Thallium | Vanadium |
|------------------------------------|------------------------------|--------------|----------|---------|---------|----------|---------|---------|---------|----------|--------|----------|----------|
| CSC-101 | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | 835JD | 28800D | 17100D | 26000D | 13700D | 2250000 | 28300JD | 1670D | 14900D | <497U | 25300D |
| CSC-101 Dup | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | 805JD | 17800D | 6210D | 14700D | 9160D | 1570000 | 17500D | 804JD | 10400D | <500U | 24900D |
| CSC-102 | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | <500U | 6120D | 1320D | 13900D | 6410D | 142000D | 16400D | <500U | 830JD | 1220D | 12800D |
| CSC-103 | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | 1510D | 31800D | 14100D | 14300D | 15100D | 4050000 | 12600D | <502U | 20100D | 575JD | 37100D |
| CSC-103A | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | 1190D | 19400D | 10800D | 19600D | 13300D | 2960000 | 14900D | 662JD | 12500D | <500U | 28400D |
| CSC-104 | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | 1520D | 34100D | 26800D | 18800D | 22900D | 3160000 | 29200D | 979JD | 28400D | 674JD | 24500D |
| CSC-104A | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | 1380D | 28000D | 11900D | 12300D | 12300D | 4510000 | 10200D | <499U | 25600D | 559JD | 30400D |
| CSC-105 | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | 1040D | 27300D | 23200D | 26200D | 21900D | 718000D | 51600D | 523JD | 9140D | 695JD | 25000D |
| CSC-106 | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | 1320D | 21900D | 16900D | 24300D | 18200D | 468000D | 39900D | 661JD | 8800D | <495U | 22800D |
| CSC-107 | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | 4900D | 136000D | 17100D | 55000D | 33700D | 818000D | 58700D | 748JD | 55200D | 750JD | 21600D |
| CSC-108 | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | 2490D | 73400D | 18000D | 24000D | 18200D | 1450000 | 26500D | 630JD | 26400D | 501JD | 18900D |
| CSC-110/109A | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | <491U | 19600D | 1570D | 19200D | 9160D | 93000D | 12600D | <491U | 1090D | <491U | 24100D |
| CSC-111A | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | 2070D | 38000D | 22500D | 18700D | 13300D | 7030000 | 14200D | 705JD | 31600D | 561JD | 29600D |
| CSC-112 | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | 1370D | 29000D | 14900D | 12700D | 11000D | 4750000 | 9860D | <496U | 18800D | <496U | 25000D |
| CSC-113 | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | 1810D | 36500D | 17000D | 20100D | 13300D | 5090000 | 12100D | <498U | 27300D | <498U | 41800D |
| CSC-114 | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | <498U | 6900D | 19300D | 13900JD | 104000J | 396000B | 27800JD | 1170D | 826JD | 756JD | 28600JD |
| CSC-115 | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | 617JD | 4630D | 9660D | 9980D | 41500D | 267000B | 21400D | <493U | 697JD | 1460D | 11300D |
| CSC-116 | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | 1780D | 36400D | 7630D | 9790D | 5450D | 7990000 | 5710D | <497U | 42300D | 1130D | 25100D |
| CSC-116A | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | 2180D | 50800D | 11500D | 11700D | 6520D | 9400000 | 8400D | 687JD | 57700D | 991JD | 28000D |
| CSC-116A Dup | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | 1970D | 42400D | 14100D | 12800D | 5420D | 9370000 | 9740D | 1230D | 56200D | 667JD | 29200D |
| CSC-117 | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | 896JD | 49700D | 7610D | 21500D | 58900D | 3520000 | 10800D | <496U | 24900D | 1080D | 27500D |
| CSC-117A | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | 2120D | 59300D | 8740D | 17700D | 9520D | 4430000 | 9100D | <495U | 33400D | 897JD | 30900D |
| CSC-118 | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | 1960D | 42500D | 7520D | 12200D | 7520D | 7470000 | 11100D | <500U | 50200D | 708JD | 22700D |
| CSC-119 | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | 2880D | 54700D | 10700D | 7990D | 5950D | 8840000 | 6430D | 638JD | 66400D | <499U | 24800D |
| CSC-120 | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | <499U | 8330D | 255D | 21000D | 17300D | 51700D | 12900D | 644JD | <499U | 1140D | 55200D |
| CSC-120A | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | <496U | 15200D | 912D | 22500D | 13100D | 233000D | 14000D | 541JD | <496U | <496U | 59600D |
| CSC-Opp-1 | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | 1860D | 39700D | 17100D | 10900D | 11200D | 6820000 | 10800D | 1160D | 39800D | 673JD | 26500D |
| ST004 | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | <498U | 11200D | 2100D | 23100D | 8450D | 270000D | 23100D | 655JD | 2420D | 595JD | 16500D |
| ST005-1 | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | <498U | 11100D | 1700D | 17600D | 6940D | 288000D | 19400D | 600JD | 2380D | <498U | 14000D |
| ST005A | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | <4970U | 47500D | 490000D | 10300JD | 16900D | 1860000 | 149000D | 8050JD | 27200D | <4970U | 13200JD |
| ST005B | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | <4970U | 33500D | 269000D | 9800JD | 15400D | 1060000 | 398000D | 12200D | 7850JD | <4970U | 16900JD |
| ST008 | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | <494U | 7160D | 528D | 18800D | 7270D | 61500D | 21700D | <494U | <494U | <494U | 13700D |
| ST009 | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | 4680D | 108000D | 50400D | 27300D | 18500D | 5050000 | 47700D | 1740D | 44900D | 1310D | 26700D |
| ST009A | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | 4260D | 87000D | 32400D | 23500D | 14900D | 3690000 | 40300D | 1500D | 29500D | 992JD | 25900D |
| ST009B | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | 2040D | 107000D | 126000D | 16400D | 23200D | 1400000 | 42700D | 1790D | 18000D | 1120D | 18500D |
| ST010 | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | <492U | 9720D | 412D | 18000D | 13700D | 54800BD | 20600D | <492U | 613JD | <492U | 14100D |
| ST010A | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | <493U | 5170D | 266D | 23300D | 7810D | 24700BD | 22600D | <493U | 1440D | <493U | 16100D |
| ST014 | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | <497U | 6840D | 839D | 19800D | 7390D | 110000B | 20800D | <497U | 621JD | <497U | 16000D |
| ST015 | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | 1670D | 59600D | 17500D | 35700D | 19100D | 2580000 | 29100D | 935JD | 36500D | 2230D | 28300D |
| ST015A | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | <491U | 5070D | 697D | 15300D | 6310D | 85500BD | 18200D | <491U | 1020D | <491U | 11000D |
| ST016 | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | <4960U | 25000D | 65800D | 6680JD | 589000D | 725000B | 725000D | <4960U | 9930D | 106000D | <9920U |
| ST016A | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | <501U | 5610D | 523D | 16000D | 7250D | 76700BD | 18600D | <501U | <501U | <501U | 11800D |
| STATION_ID | ANALYSIS | UNITS | Antimony | Arsenic | Cadmium | Chromium | Cobalt | Lead | Nickel | Selenium | Silver | Thallium | Vanadium |
| CSC-101 | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | 835JD | 28800D | 17100 | 26000D | 13700D | 2250000 | 28300 | 1670D | 14900 | <497U | 25300D |
| CSC-101 Dup | ICP-MS Tot. Rec. Metals-2010 | ug/kg dry wt | 805JD | 17800D | 6210 | 14700D | 9160D | 1570000 | 17500 | 804JD | 10400 | <500U | 24900D |
| Relative Percent Difference | | | % | N/A | N/A | 93.44% | N/A | N/A | 35.60% | 47.16% | N/A | 35.57% | N/A |

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Table 5.0-6 Continued: Carpenter-Snow Creek Total Metals Sediment Analytical Data - September 2011

| STATION_ID | ANALYSIS | UNITS | Aluminum | Barium | Beryllium | Calcium | Copper | Iron | Magnesium | Manganese | Silica (SiO2) | Strontium | Zinc | Mercury |
|--------------|----------------------------|--------------|----------|--------|-----------|---------|--------|---------|-----------|-----------|---------------|-----------|--------|---------|
| CSC-101 | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 12100D | 744D | <1.99U | 7010D | 981D | 29800D | 6300D | 4850D | 7230D | 59.0D | 4160D | 0.09D |
| CSC-101 Dup | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 7430D | 470D | <2.00U | 2400D | 669D | 24900D | 5770D | 2490D | 4940D | 24.5D | 1280D | <0.02U |
| CSC-102 | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 7940D | 323D | <2.00U | 3960D | 22.0D | 18000D | 6670D | 984D | 4640D | 19.7D | 533D | <0.02U |
| CSC-103 | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 4870D | 317D | <2.01U | 2890D | 2080D | 32100D | 3580D | 3790D | 4600D | 15.0D | 2480D | <0.02U |
| CSC-103A | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 6140D | 174D | <2.00U | 2600D | 1380D | 26900D | 4700D | 3200D | 5180D | 21.3D | 1920D | <0.02U |
| CSC-104 | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 7120D | 353D | <2.00U | 3030D | 1550D | 28800D | 4890D | 7380D | 5360D | 20.9D | 4010D | 0.05D |
| CSC-104A | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 5270D | 284D | <1.99U | 2770D | 2100D | 32500D | 3440D | 3350D | 4970D | 16.9D | 1870D | 0.03D |
| CSC-105 | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 9910D | 465D | <1.99U | 2950D | 96.1D | 27300D | 6900D | 8880D | 5480D | 21.3D | 4090D | 0.04D |
| CSC-106 | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 8000D | 695D | <1.98U | 2670D | 75.4D | 25200D | 5410D | 5700D | 5920D | 27.8D | 3170D | 0.02D |
| CSC-107 | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 10200D | 632D | <1.99U | 3430D | 89.1D | 33100D | 5110D | 10900D | 5840D | 21.6D | 2850D | 0.11D |
| CSC-108 | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 9030D | 291D | <1.98U | 2300D | 219D | 27200D | 5260D | 5470D | 5640D | 12.5D | 3260D | 0.06D |
| CSC-110/109A | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 8690D | 74.4D | <1.97U | 3070D | 20.5D | 21800D | 5280D | 547D | 5960D | 16.1D | 288D | 0.02D |
| CSC-111A | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 6920D | 419D | <2.00U | 3770D | 3090D | 38200D | 4400D | 5670D | 5600D | 25.0D | 3570D | 0.04D |
| CSC-112 | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 4700D | 251D | <1.98U | 2340D | 1910D | 29000D | 3460D | 4350D | 4940D | 14.0D | 1930D | 0.02D |
| CSC-113 | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 6500D | 268D | <1.99U | 2930D | 2700D | 36200D | 5040D | 3990D | 5720D | 16.3D | 2250D | 0.21D |
| CSC-114 | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 12300D | 219D | 4.29JD | 4540D | 430D | 34200D | 5360D | 6340D | 7720D | 42.9D | 1680D | 0.02D |
| CSC-115 | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 5190D | 177D | <1.97U | 1940D | 225D | 19700D | 2240D | 3710D | 5370D | 25.6D | 1060D | 0.06D |
| CSC-116 | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 3570D | 341D | <1.99U | 2300D | 2990D | 33800D | 1720D | 2200D | 5000D | 14.5D | 1070D | <0.02U |
| CSC-116A | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 4400D | 384D | <1.99U | 2580D | 4360D | 39200D | 2250D | 2480D | 4580D | 16.6D | 1760D | 0.04D |
| CSC-116A Dup | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 5000D | 608D | <1.99U | 2630D | 4050D | 37900D | 2120D | 2550D | 5140D | 19.0D | 2670D | 0.05D |
| CSC-117 | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 10400D | 155D | <1.98U | 2810D | 1310D | 54000D | 5230D | 10100D | 6330D | 19.8D | 1100D | 0.10D |
| CSC-117A | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 7120D | 228D | <1.98U | 1910D | 1480D | 92000D | 3520D | 2240D | 5490D | 21.7D | 1680D | 0.29D |
| CSC-118 | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 4320D | 334D | <2.00U | 2430D | 2740D | 34300D | 2510D | 2640D | 4230D | 15.5D | 1340D | 0.06D |
| CSC-119 | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 2600D | 238D | <1.99U | 1710D | 4270D | 43300D | 1250D | 2110D | 3710D | 12.2D | 1290D | 0.03D |
| CSC-120 | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 10800D | 90.2D | <2.00U | 4200D | 16.9D | 23700D | 8440D | 268D | 5850D | 23.5D | 93.3D | <0.02U |
| CSC-120A | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 13300D | 108D | <1.98U | 5610D | 25.4D | 25700D | 9690D | 442D | 6380D | 40.9D | 291D | 0.03D |
| CSC-Opp-1 | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 4780D | 357D | <2.00U | 2490D | 3820D | 34100D | 2390D | 3930D | 5780D | 17.6D | 3140D | 0.04D |
| ST004 | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 9780D | 278D | <1.99U | 4050D | 25.5D | 20000D | 6170D | 958D | 5580D | 27.3D | 781D | 0.03D |
| ST005-1 | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 8070D | 394D | <1.99U | 2410D | 34.7D | 19600D | 5450D | 958D | 5230D | 22.4D | 609D | 0.03D |
| ST005A | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 6570D | 399D | <19.9U | 5290D | 127D | 15100D | 2340JD | 177000D | 5790JD | 118D | 73400D | 0.10D |
| ST005B | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 7830D | 5220D | <19.9U | 5120D | 88.1JD | 13200D | 2730D | 235000D | 6990JD | 146D | 90900D | 0.11D |
| ST008 | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 9490D | 163D | <1.98U | 4190D | 35.4D | 27000D | 6430D | 327D | 4730D | 16.5D | 139D | 0.02D |
| ST009 | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 7200D | 446D | <1.98U | 5330D | 95.1D | 37700D | 5250D | 13600D | 6400D | 25.8D | 10800D | 0.14D |
| ST009A | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 7640D | 377D | <1.99U | 5600D | 70.8D | 33900D | 5650D | 9770D | 6700D | 23.1D | 7920D | 0.16D |
| ST009B | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 8360D | 1850D | <1.99U | 17900D | 83.2D | 140000D | 4540D | 25200D | 9620D | 58.2D | 11400D | 0.20D |
| ST010 | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 8880D | 164D | <1.97U | 2610D | 15.9D | 19500D | 6100D | 582D | 5410D | 20.0D | 109D | 0.02D |
| ST010A | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 9890D | 235D | <1.97U | 2370D | 15.5D | 22100D | 6010D | 237D | 4120D | 25.5D | 61.3D | <0.02U |
| ST014 | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 9260D | 171D | <1.99U | 2210D | 17.9D | 20200D | 6770D | 571D | 5440D | 20.8D | 311D | 0.02D |
| ST015 | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 16500D | 615D | <1.99U | 7330D | 115D | 35300D | 7620D | 9790D | 7450D | 25.3D | 3430D | 0.15D |
| ST015A | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 8210D | 166D | <1.96U | 4420D | 13.9D | 19400D | 5200D | 402D | 5270D | 17.9D | 193D | 0.03D |
| ST016 | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 3490D | 1180D | <19.8U | 10600D | 84.6JD | 53000D | 4120D | 274000D | 10700D | 347D | 64000D | 0.03D |
| ST016A | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 8450D | 194D | <2.00U | 2440D | 20.8D | 21900D | 5510D | 752D | 5100D | 18.4D | 220D | 0.02D |
| STATION_ID | ANALYSIS | UNITS | Aluminum | Barium | Beryllium | Calcium | Copper | Iron | Magnesium | Manganese | Silica (SiO2) | Strontium | Zinc | Mercury |
| CSC-101 | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 12100 | 744D | <1.99U | 7010 | 981 | 29800D | 6300 | 4850D | 7230D | 59.0D | 4160 | 0.09D |
| CSC-101 Dup | ICPOE Tot. Rec Metals-2010 | mg/kg dry wt | 7430 | 470D | <2.00U | 2400 | 669 | 24900D | 5770 | 2490D | 4940D | 24.5D | 1280 | < |

Table 5.0-7 Carpenter-Snow Creek Pore Water Analytical Data - September 2011

| STATION_ID | ANALYSIS | UNITS | MATRIX | Aluminum | Antimony | Arsenic | Barium | Beryllium | Cadmium | Calcium | Chromium | Cobalt | Copper | Hardness (mg/L) | Iron | Lead | Magnesium | Manganese | Nickel | Selenium | Silica (SiO2) | Silver | Strontium | Thallium | Vanadium | Zinc |
|--------------|------------------|-------|------------|----------|----------|---------|--------|-----------|---------|---------|----------|---------|--------|-----------------|-------|---------|-----------|-----------|---------|----------|---------------|---------|-----------|----------|----------|--------|
| CSC-101 | Dissolved Metals | ug/L | Pore Water | <20.0U | <0.500U | 0.663J | 93.0 | <2.00U | 0.213 | 20100 | 0.815J | <0.100U | 3.31 | 77 | <100U | 0.924 | 6480 | 2.28J | <0.500U | <0.500U | 8260 | <0.500U | 178 | <0.500U | <1.00U | 34.7 |
| CSC-102 | Dissolved Metals | ug/L | Pore Water | 21.6J | <0.500U | 0.730J | 121 | <2.00U | 0.164J | 20300 | 1.52 | <0.100U | <2.00U | 77 | <100U | 0.733 | 6430 | <2.00U | <0.500U | <0.500U | 7840 | <0.500U | 184 | <0.500U | <1.00U | 58.9 |
| CSC-103 | Dissolved Metals | ug/L | Pore Water | <20.0U | <0.500U | <0.500U | 32.2 | <2.00U | 4.40 | 20800 | 0.537J | <0.100U | 11.1 | 78 | <100U | 1.74 | 6320 | 5.41 | 2.67 | <0.500U | 13200 | <0.500U | 125 | <0.500U | <1.00U | 900 |
| CSC-104 | Dissolved Metals | ug/L | Pore Water | <20.0U | <0.500U | <0.500U | 29.8 | <2.00U | 3.90 | 14200 | 0.511J | <0.100U | 23.7 | 57 | <100U | 2.75 | 5200 | 7.23 | 4.18 | <0.500U | 11600 | <0.500U | 67.3 | <0.500U | <1.00U | 850 |
| CSC-105 | Dissolved Metals | ug/L | Pore Water | <20.0U | <0.500U | <0.500U | 13.0 | <2.00U | 0.997 | 14500 | <0.500U | <0.100U | 2.21 | 58 | <100U | 0.465 | 5280 | 5.06 | 3.01 | <0.500U | 11900 | <0.500U | 66.4 | <0.500U | <1.00U | 428 |
| CSC-111A | Dissolved Metals | ug/L | Pore Water | <20.0U | <0.500U | <0.500U | 50.1 | <2.00U | 12.9 | 22500 | <0.500U | <0.100U | 32.1 | 86 | <100U | 1.36 | 7270 | 246 | 5.56 | 0.716J | 15200 | <0.500U | 155 | <0.500U | <1.00U | 2280 |
| CSC-113 | Dissolved Metals | ug/L | Pore Water | 20.6J | <0.500U | <0.500U | 33.6 | <2.00U | 20.1 | 21500 | <0.500U | <0.100U | 41.4 | 83 | <100U | 5.06 | 7090 | 657 | 7.50 | 0.505J | 14700 | <0.500U | 158 | <0.500U | <1.00U | 3140 |
| CSC-116 | Dissolved Metals | ug/L | Pore Water | <20.0U | <0.500U | <0.500U | 59.3 | <2.00U | 8.09 | 23100 | 0.973J | <0.100U | 126 | 82 | <100U | 61.4 | 5960 | 6.25 | 2.52 | 0.629J | 15000 | <0.500U | 171 | <0.500U | <1.00U | 1090 |
| CSC-116A | Dissolved Metals | ug/L | Pore Water | 30.8J | <0.500U | <0.500U | 57.9 | <2.00U | 25.1 | 22700 | 0.627J | <0.100U | 99.3 | 90 | <100U | 16.4 | 8020 | 985 | 10.4 | <0.500U | 12700 | <0.500U | 168 | <0.500U | <1.00U | 4260 |
| CSC-116A Dup | Dissolved Metals | ug/L | Pore Water | 27.8J | <0.500U | <0.500U | 59.2 | <2.00U | 24.9 | 22900 | <0.500U | <0.100U | 102 | 91 | <100U | 16.7 | 8160 | 968 | 9.24 | <0.500U | 12700 | <0.500U | 171 | <0.500U | <1.00U | 4330 |
| CSC-120A | Dissolved Metals | ug/L | Pore Water | <20.0U | <0.500U | <0.500U | 12.9 | <2.00U | <0.100U | 8800 | 0.667J | <0.100U | <2.00U | 36 | <100U | 0.262 | 3350 | <2.00U | <0.500U | <0.500U | 10100 | <0.500U | 58.8 | <0.500U | <1.00U | 11.2J |
| Dup-01 | Dissolved Metals | ug/L | Pore Water | <20.0U | <0.500U | 0.671J | 92.2 | <2.00U | 0.200 | 20200 | 0.633J | <0.100U | 3.21 | 77 | <100U | 0.909 | 6470 | <2.00U | <0.500U | <0.500U | 8160 | <0.500U | 178 | <0.500U | <1.00U | 37.2 |
| ST010A | Dissolved Metals | ug/L | Pore Water | <20.0U | <0.500U | 1.37J | 111 | <2.00U | <0.100U | 22300 | 7.96 | <0.100U | <2.00U | 83 | <100U | <0.100U | 6750 | <2.00U | <0.500U | <0.500U | 8190 | <0.500U | 229 | <0.500U | 2.26 | <10.0U |

| STATION_ID | ANALYSIS | UNITS | MATRIX | Aluminum | Antimony | Arsenic | Barium | Beryllium | Cadmium | Calcium | Chromium | Cobalt | Copper | Iron | Lead | Magnesium | Manganese | Nickel | Selenium | Silica (SiO2) | Silver | Strontium | Thallium | Vanadium | Zinc |
|--------------|--------------|-------|------------|----------|----------|---------|--------|-----------|---------|---------|----------|---------|--------|-------|-------|-----------|-----------|--------|----------|---------------|--------|-----------|----------|----------|------|
| CSC-101 | Total Metals | ug/L | Pore Water | 2870 | <2.50U | 3.79JD | 276 | <2.00U | 4.95D | 22800 | 9.04D | 2.81D | 212 | 5090 | 516D | 8380 | 1100 | 8.06D | <2.50U | 18200 | 3.81JD | 201 | <2.50U | <5.00U | 768 |
| CSC-102 | Total Metals | ug/L | Pore Water | 5050 | <2.50U | 43.5D | 945 | <2.00U | 3.53D | 23300 | 13.0D | 3.63D | 22.6 | 10900 | 733D | 9150 | 2620 | 10.6D | <2.50U | 25000 | 24.1D | 219 | <2.50U | <5.00U | 636 |
| CSC-103 | Total Metals | ug/L | Pore Water | 2800 | <2.50U | 13.6D | 309 | <2.00U | 18.3D | 24200 | 7.54D | 4.48D | 1050 | 11000 | 3060D | 7770 | 2490 | 11.2D | <2.50U | 22700 | 14.1D | 142 | <2.50U | <5.00U | 2440 |
| CSC-104 | Total Metals | ug/L | Pore Water | 2700 | <2.50U | 13.5D | 486 | <2.00U | 24.2D | 25500 | 8.01D | 7.25D | 1790 | 14100 | 5390D | 8270 | 3660 | 12.9D | <2.50U | 23600 | 22.2D | 154 | <2.50U | 7.70JD | 3380 |
| CSC-105 | Total Metals | ug/L | Pore Water | 740 | <2.50U | <2.50U | 34.5 | <2.00U | 3.57D | 15900 | 4.38JD | 1.22D | 14.7 | 1590 | 44.8D | 5660 | 639 | 7.26D | <2.50U | 13600 | <2.50U | 69.3 | <2.50U | <5.00U | 852 |
| CSC-109A | Total Metals | ug/L | Pore Water | 640 | <2.50U | <2.50U | 86.0 | <2.00U | 17.8D | 26000 | 3.05JD | 1.61D | 425 | 2630 | 946D | 8000 | 1120 | 8.86D | <2.50U | 17900 | <2.50U | 181 | <2.50U | <5.00U | 2930 |
| CSC-111A | Total Metals | ug/L | Pore Water | 1480 | <2.50U | 5.16JD | 102J | <2.00U | 15.3D | 23600 | 5.20D | 1.71D | 423 | 4490 | 723D | 7920 | 923 | 8.38D | <2.50U | 19900 | 6.57D | 160 | <2.50U | <5.00U | 2510 |
| CSC-113 | Total Metals | ug/L | Pore Water | 1440 | <2.50U | 8.71JD | 368 | <2.00U | 28.2D | 23200 | 5.32D | 3.07D | 1050 | 7510 | 3260D | 7830 | 2430 | 12.0D | <2.50U | 19000 | 13.1D | 166 | 2.84JD | <5.00U | 3890 |
| CSC-116 | Total Metals | ug/L | Pore Water | 4320 | <2.50U | 53.2D | 190 | <2.00U | 11.9D | 24800 | 10.9D | 4.42D | 1990 | 21200 | 5690D | 7260 | 860 | 8.07D | <2.50U | 30100 | 44.6D | 184 | <2.50U | 10.8D | 1450 |
| CSC-116A | Total Metals | ug/L | Pore Water | 207 | <2.50U | <2.50U | 76.7 | <2.00U | 24.0D | 24000 | 3.20JD | <0.500U | 233 | 712 | 266D | 8570 | 1070 | 11.1D | <2.50U | 13000 | <2.50U | 175 | <2.50U | <5.00U | 4180 |
| CSC-116A Dup | Total Metals | ug/L | Pore Water | 151 | <2.50U | <2.50U | 67.3 | <2.00U | 24.0D | 23600 | 3.46JD | <0.500U | 169 | 376 | 148D | 8450 | 1010 | 10.5D | <2.50U | 13100 | <2.50U | 176 | <2.50U | <5.00U | 4190 |

Table 5.0-8 Carpenter-Snow Creek Mine Adit Water Analytical Results - July 2011

| STATION_ID | ANALYSIS | UNITS | MATRIX | Aluminum | Antimony | Arsenic | Barium | Beryllium | Cadmium | Calcium | Chromium | Cobalt | Copper | Iron | Lead | Magnesium | Manganese | Mercury | Nickel | Selenium | Silver | Thallium | Vanadium | Zinc |
|----------------|--------------|-------|---------------|----------|----------|---------|--------|-----------|---------|----------|----------|--------|---------|----------|--------|-----------|-----------|---------|--------|----------|--------|----------|----------|----------|
| 07-079-AD1 | Total Metals | ug/L | Surface Water | 200R | 2R | 0.61U | 5.3U | 0.12U | 39.2J- | 67200J- | 0.13U | 3.4J- | 1.9U | 34.9U | 4.5J- | 42600J- | 4750J- | 0.2R | 105J- | 1.5U | 1R | 1R | 0.14U | 19500J- |
| 07-084-AD1 | Total Metals | ug/L | Surface Water | 200R | 0.24U | 0.68U | 14.5J- | 1R | 6.4J- | 45600J- | 2R | 3.2J- | 1.1U | 237J- | 6.7J- | 21000J- | 2300J- | 0.2R | 25.5J- | 5R | 0.1U | 1R | 5R | 3330J- |
| 07-084-AD2 | Total Metals | ug/L | Surface Water | 2960J- | 2R | 1.5J- | 41.3J- | 0.5U | 45.8J- | 61000J- | 7.2J- | 1.8J- | 23.1J- | 2460J- | 151J- | 36400J- | 2740J- | 0.2R | 115J- | 0.76U | 1.4J- | 1.1J- | 3.4U | 11900J- |
| 07-084-AD2 Dup | Total Metals | ug/L | Surface Water | 1430J- | 2R | 1U | 29.6J- | 0.43U | 47J- | 58900J- | 4.1J- | 1.6J- | 17.4J- | 1150J- | 102J- | 35100J- | 2810J- | 0.2R | 115J- | 0.88UJ | 0.78U | 0.85U | 1.6U | 12300J- |
| 07-087-AD1 | Total Metals | ug/L | Surface Water | 17.3J- | 2R | 0.56U | 7.4U | 0.098U | 2.6J- | 87800J- | 0.1U | 6.8J- | 1.6U | 973J- | 12.7J- | 52200J- | 17100J- | 0.2R | 56.1J- | 0.68U | 1R | 1R | 5R | 1650J- |
| 07-111-SW1 | Total Metals | ug/L | Surface Water | 626J- | 2R | 1.4J- | 15J- | 0.83U | 41.5J- | 11300J- | 0.55U | 3.1J- | 27.1J- | 224J- | 142J- | 5460J- | 9290J- | 0.2R | 32.8J- | 0.64U | 1.3J- | 1R | 5R | 9360J- |
| 07-111-SW2 | Total Metals | ug/L | Surface Water | 487J- | 2R | 2.6J- | 4.8U | 0.43U | 31J- | 12900J- | 0.24U | 10.1J- | 18.9J- | 1390J- | 278J- | 5760J- | 10500J- | 0.2R | 32.1J- | 0.85U | 2.5J- | 1R | 5R | 7610J- |
| 07-112-AD1 | Total Metals | ug/L | Surface Water | 885J- | 2R | 2.6J- | 6.9U | 0.3U | 16J- | 18200J- | 0.28U | 4.3J- | 31.2J- | 1930J- | 49.6J- | 5030J- | 1410J- | 0.2R | 9J- | 5R | 0.52U | 1R | 5R | 3610J- |
| 07-121-SW1 | Total Metals | ug/L | Surface Water | 1440J- | 2R | 0.49U | 17.9J- | 0.83U | 56.8J- | 27700J- | 1.1U | 15.2J- | 15.9J- | 675J- | 66.2J- | 12900J- | 13600J- | 0.2R | 45.8J- | 1.4U | 0.6U | 0.15U | 5R | 19400J- |
| 07-135-AD2 | Total Metals | ug/L | Surface Water | 10800J- | 0.24U | 6J- | 39.1J- | 7.6J- | 1920J- | 265000J- | 5.5J- | 468J- | 35900J- | 40700J- | 3260J- | 130000J- | 248000J- | 0.2R | 495J- | 13.7J- | 8.6J- | 1.2J- | 4.7U | 254000J- |
| 07-156-AD1 | Total Metals | ug/L | Surface Water | 1530J- | 2R | 0.26U | 16.1J- | 0.89U | 11.6J- | 10300J- | 0.39U | 5.1J- | 35.8J- | 19.3U | 5.5J- | 2850U | 1530J- | 0.2R | 21.1J- | 5R | 0.55U | 1R | 5R | 2400J- |
| 07-156-AD2 | Total Metals | ug/L | Surface Water | 349J- | 4.5J- | 38J- | 62.6J- | 1R | 0.43U | 1900J- | 0.39U | 0.2U | 15.1J- | 11600J- | 394J- | 311U | 27J- | 0.2R | 0.7U | 5R | 81.4J- | 0.88U | 1.8U | 95.3J- |
| 07-156-AD4 | Total Metals | ug/L | Surface Water | 312J- | 2R | 0.23U | 27J- | 0.094U | 2J- | 3620J- | 2R | 1.1J- | 12.5J- | 52.2U | 1.6J- | 1330U | 157J- | 0.2R | 6.5J- | 5R | 1.6J- | 1R | 5R | 256J- |
| 07-156-SW1 | Total Metals | ug/L | Surface Water | 2110J- | 2R | 1.1J- | 18.4J- | 1.4J- | 18.9J- | 47000J- | 0.2U | 77.9J- | 27J- | 6900J- | 13.1J- | 20800J- | 21500J- | 0.2R | 152J- | 1.1U | 2.1J- | 0.17U | 0.14U | 9620J- |
| 07-157-AD2 | Total Metals | ug/L | Surface Water | 725J- | 2R | 2.3J- | 15.4J- | 1.1J- | 30.9J- | 22800J- | 0.089U | 10.7J- | 118J- | 1180J- | 149J- | 7390J- | 7540J- | 0.2R | 26.5J- | 5R | 2.2J- | 1R | 5R | 5090J- |
| 07-157-AD3 | Total Metals | ug/L | Surface Water | 722J- | 2R | 1.1J- | 15J- | 1.2J- | 31.6J- | 22600J- | 2R | 11.1J- | 116J- | 1230J- | 151J- | 7370J- | 7580J- | 0.2R | 26.5J- | 5R | 2.2J- | 1R | 5R | 5130J- |
| 07-174-AD1 | Total Metals | ug/L | Surface Water | 10.6J- | 2R | 0.34U | 8U | 1R | 1R | 25000J- | 0.93U | 0.45U | 0.77U | 17U | 0.81U | 5640J- | 3.7J- | 0.2R | 1U | 5R | 1R | 5R | 26.4J- | |
| 07-174-SW1 | Total Metals | ug/L | Surface Water | 229J- | 2R | 0.54U | 9.8U | 0.23U | 9.8J- | 11700J- | 0.23U | 2.9J- | 31.4J- | 252J- | 40.5J- | 3640U | 2050J- | 0.2R | 9.4J- | 5R | 0.52U | 1R | 5R | 1850J- |
| 07-174-SW2 | Total Metals | ug/L | Surface Water | 184J- | 2R | 0.72U | 12.3J- | 0.19U | 9.1J- | 12500J- | 1.5U | 2.3J- | 24.8J- | 215J- | 31J- | 3870U | 1600J- | 0.2R | 10.8J- | 5R | 0.41U | 1R | 0.16U | 1800J- |
| FB-01 | Total Metals | ug/L | Surface Water | 200R | 2R | 1R | 10R | 1R | 1R | 144J- | 1.6U | 1R | 0.51U | 100R | 0.15U | 35.1U | 0.57U | 0.2R | 1.6J- | 5R | 1R | 1R | 5R | 1.5U |
| FB-02 | Total Metals | ug/L | Surface Water | 200R | 2R | 1R | 0.5U | 1R | 1R | 142J- | 2R | 1R | 0.43U | 100R | 0.12U | 44.4U | 1R | 0.2R | 1R | 5R | 1R | 1R | 5R | 0.88U |
| FB-03 | Total Metals | ug/L | Surface Water | 200R | 2R | 1R | 2U | 1R | 1R | 593J- | 2R | 1R | 0.24U | 100R | 0.15U | 40.5U | 0.27U | 0.2R | 1R | 5R | 1R | 1R | 5R | 1.3U |
| MH3AM6BLK | Total Metals | ug/L | Water | 200U | 2U | 1U | 10U | 1U | 1U | 5000U | 2U | 1U | 2U | 100U | 1U | 27.5U | 1U | 0.2U | 1U | 5U | 1U | 1U | 5U | -0.38J |
| MH3AP6BLK | Total Metals | ug/L | Water | 200U | 2U | 1U | 10U | 1U | 1U | 5000U | 2U | 1U | 2U | 100U | 1U | 5000U | 0.85U | 0.2U | 1U | 5U | 1U | 1U | 5U | 0.28U |
| MH3AQ6BLK | Total Metals | ug/L | Water | 200 | 2 | 0.15 | 10 | 1 | 1 | 5000 | 2 | 1 | 2 | 100 | 1 | 5000 | 1 | | 1 | 5 | 1 | 1 | 5 | -0.37 |
| MH3AS6BLK | Total Metals | ug/L | Water | 200 | 2 | 1 | 10 | 1 | 1 | 5000 | 2 | 1 | 2 | 100 | 1 | 20.3 | 1 | | 1 | 5 | 1 | 1 | 5 | -0.35 |
| OPP-08 | Total Metals | ug/L | Surface Water | 5050J- | 0.76U | 21.2J- | 18.1J- | 10.8J- | 121J- | 153000J- | 0.55U | 372J- | 125J- | 123000J- | 32.3J- | 72200J- | 115000J- | 0.2R | 662J- | 3.6U | 1.9J- | 0.34U | 0.57U | 52200J- |
| OPP-11 | Total Metals | ug/L | Surface Water | 394J- | 2R | 4.9J- | 7.5U | 0.23U | 2.7J- | 6180J- | 0.61U | 3.3J- | 10.3J- | 2070J- | 8.1J- | 3530U | 868J- | 0.2R | 6.3J- | 5R | 0.55U | 1R | 0.14U | 767J- |
| OPP-12 | Total Metals | ug/L | Surface Water | 200R | 2R | 0.39U | 26.5J- | 1R | 20.8J- | 49800J- | 0.17U | 1.1J- | 1.9U | 10.8U | 3.7J- | 34100J- | 34.9J- | 0.2R | 24.8J- | 5R | 1R | 0.16U | 7290J- | |
| OPP-13 | Total Metals | ug/L | Surface Water | 9220J- | 0.3U | 4.8J- | 19.6J- | 7J- | 1630J- | 259000J- | 4.6J- | 425J- | 27200J- | 37400J- | 2150J- | 125000J- | 215000J- | 0.2R | 480J- | 12.2J+ | 8.9J- | 1.1J- | 2.6U | 226000J- |
| OPP-14 | Total Metals | ug/L | Surface Water | 52.8J- | 2R | 0.42U | 27.4J- | 0.15U | 0.41U | 5140J- | 0.51U | 0.42U | 26.6J- | 152J- | 95.5J- | 2090U | 27J- | 0.2R | 0.47U | 5R | 0.2U | 0.27U | 0.39U | 58.1J- |
| OPP-14 Dup | Total Metals | ug/L | Surface Water | 41.3J- | 2R | 0.29U | 21.3J- | 1R | 0.17U | 5060J- | 0.37U | 0.26U | 18.4J- | 83.1U | 49.2J- | 2050U | 16.2J- | 0.2R | 0.39U | 5R | 0.0 | | | |

Table 5.0-9 Carpenter-Snow Creek Mine Soil Analytical Results - July 2011

| STATION_ID | ANALYSIS | UNITS | MATRIX | Aluminum | Antimony | Arsenic | Barium | Beryllium | Cadmium | Calcium | Chromium | Cobalt | Copper | Iron | Lead | Magnesium | Manganese | Mercury | Nickel | Potassium | Selenium | Silver | Sodium | Thallium | Vanadium | Zinc |
|-------------|--------------|-------|--------|----------|----------|---------|--------|-----------|---------|---------|----------|--------|--------|---------|---------|-----------|-----------|---------|--------|-----------|----------|--------|--------|----------|----------|----------|
| 07-079-SE1 | total Metals | mg/kg | soil | 2780J- | 11.5J- | 66.9J- | 366J- | 1.1J- | 387J- | 2640J- | 26.3J- | 146J- | 183J- | 15900J- | 4630J- | 1090J- | 22300J- | 0.45J- | 1190J- | 1020J- | 62.8J- | 50.6J- | 139U | 107J- | 4.2R | 138000J- |
| 07-079-WR1 | total Metals | mg/kg | soil | 8410J- | 15.7J- | 166J- | 428J- | 2.1J- | 40.7J- | 6760J- | 39.7J- | 31J- | 120J- | 53700J- | 8180J- | 5620J- | 17700J- | 0.46J- | 50.6J- | 2800J- | 1.3U | 114J- | 306U | 4.2J- | 41.3J- | 10300J- |
| 07-079-WR10 | total Metals | mg/kg | soil | 6490J- | 54.9J- | 1310J- | 884J- | 1.3J- | 9.1J- | 1580J- | 11.2J- | 8.3J- | 470J- | 43600J- | 19300J- | 2100J- | 4050J- | 0.72J- | 10.3J- | 2500J- | 0.71U | 250J- | 346U | 2.4J- | 20.8J- | 3200J- |
| 07-079-WR11 | total Metals | mg/kg | soil | 5190J- | 43.6J- | 349J- | 414J- | 1.3J- | 15J- | 1910J- | 25.9J- | 11.6J- | 203J- | 45200J- | 12400J- | 1630J- | 7820J- | 0.4J- | 16.5J- | 2180J- | 0.65U | 302J- | 329U | 1.8U | 27.2J- | 4530J- |
| 07-079-WR2 | total Metals | mg/kg | soil | 6520J- | 14.7J- | 163J- | 504J- | 2J- | 39.1J- | 5100J- | 26.8J- | 31.6J- | 96.1J- | 49400J- | 9230J- | 4110J- | 20400J- | 0.72J- | 52.8J- | 2160J- | 1.9U | 74.6J- | 312U | 4.2J- | 29.8J- | 8380J- |
| 07-079-WR3 | total Metals | mg/kg | soil | 5790J- | 25J- | 329J- | 462J- | 1.6J- | 26.6J- | 3390J- | 17.3J- | 20.8J- | 195J- | 41300J- | 12000J- | 2460J- | 13600J- | 0.46J- | 23.4J- | 2570J- | 1.1U | 235J- | 269U | 3J- | 24.6J- | 5970J- |
| 07-079-WR5 | total Metals | mg/kg | soil | 5550J- | 23.2J- | 294J- | 324J- | 1.5J- | 28.3J- | 3310J- | 17J- | 21.4J- | 155J- | 39500J- | 11300J- | 2600J- | 12600J- | 0.6J- | 24.2J- | 2510J- | 0.98U | 230J- | 224U | 3J- | 24J- | 6580J- |
| 07-079-WR8 | total Metals | mg/kg | soil | 5670J- | 22J- | 271J- | 344J- | 1.1J- | 15.1J- | 3000J- | 17.7J- | 12.2J- | 160J- | 34200J- | 9060J- | 1800J- | 6570J- | 0.3J- | 14.5J- | 2470J- | 0.52U | 179J- | 191U | 1.7U | 24.1J- | 3870J- |
| 07-084-AD4 | total Metals | mg/kg | soil | 6610J- | 5.4UJ | 26.3J- | 397J- | 1.4J- | 104J- | 4190J- | 37.2J- | 92.5J- | 30.5J- | 18400J- | 305J- | 4010J- | 80300J- | 0.14J- | 358J- | 1050J- | 13.8J- | 10.9J- | 193U | 16.9J- | 8.5R | 38700J- |
| 07-084-WR1 | total Metals | mg/kg | soil | 6740J- | 11.1J- | 147J- | 899J- | 1.5J- | 10.5J- | 2440J- | 31.1J- | 8.5J- | 164J- | 54800J- | 9940J- | 2320J- | 6790J- | 0.91J- | 20.6J- | 2400J- | 3R | 42.8J- | 346U | 35.9J- | 32J- | 3350J- |
| 07-084-WR2 | total Metals | mg/kg | soil | 11300J- | 6.1J- | 77.5J- | 1120J- | 1.4J- | 17.2J- | 5140J- | 63.1J- | 16.3J- | 54.9J- | 35900J- | 3260J- | 6700J- | 10100J- | 0.14J- | 51.1J- | 2260J- | 0.82U | 106J- | 305U | 1.9U | 32.4J- | 5660J- |
| 07-084-WR3 | total Metals | mg/kg | soil | 4690J- | 22.4J- | 404J- | 371J- | 1.4J- | 6J- | 4320J- | 38.9J- | 16.8J- | 220J- | 65900J- | 11700J- | 3160J- | 5210J- | 1.5J- | 44J- | 2080J- | 2.7R | 135J- | 305U | 37.5J- | 34.8J- | 1880J- |
| 07-084-WR4 | total Metals | mg/kg | soil | 12900J- | 18.2J- | 237J- | 494J- | 1.2J- | 5.1J- | 2840J- | 69.3J- | 10.3J- | 151J- | 53500J- | 6050J- | 7270J- | 1980J- | 0.2J- | 32.7J- | 3350J- | 2.9R | 97J- | 326U | 27.5J- | 47.2J- | 1260J- |
| 07-084-WR5 | total Metals | mg/kg | soil | 8520J- | 32.5J- | 207J- | 528J- | 1.3J- | 4.3J- | 1820J- | 57.6J- | 14.9J- | 177J- | 70900J- | 9830J- | 3260J- | 5210J- | 0.29J- | 32.1J- | 3510J- | 3R | 207J- | 349U | 29.1J- | 46.7J- | 1370J- |
| 07-084-WR6 | total Metals | mg/kg | soil | 3150J- | 36.2J- | 371J- | 536J- | 1.7J- | 32.4J- | 924J- | 7.4J- | 17.1J- | 219J- | 56700J- | 18600J- | 549J- | 17500J- | 2.1J- | 21.9J- | 1770J- | 1.2U | 166J- | 312U | 12J- | 16.4J- | 9280J- |
| 07-084-WR7 | total Metals | mg/kg | soil | 6070J- | 47.5J- | 389J- | 642J- | 1.8J- | 9.4J- | 1340J- | 29.9J- | 11.7J- | 330J- | 69600J- | 14600J- | 2110J- | 6840J- | 1.6J- | 23.4J- | 2420J- | 1.6U | 161J- | 378U | 14.8J- | 36.2J- | 2380J- |
| 07-085-WR1 | total Metals | mg/kg | soil | 10800J- | 1.6UJ | 25.4J- | 402J- | 1.2J- | 4.9J- | 6700J- | 40.9J- | 20.9J- | 37.7J- | 24400J- | 950J- | 8130J- | 3170J- | 0.1R | 37.1J- | 5410J- | 3R | 3.9J- | 191U | 0.63U | 40.9J- | 1980J- |
| 07-085-WR10 | total Metals | mg/kg | soil | 9840J- | 3.6UJ | 105J- | 566J- | 1.4J- | 21.2J- | 4860J- | 26.2J- | 21.8J- | 128J- | 37700J- | 8650J- | 6930J- | 11000J- | 0.21J- | 41J- | 5620J- | 1.2U | 95.2J- | 265U | 2U | 32.6J- | 5740J- |
| 07-085-WR2 | total Metals | mg/kg | soil | 5440J- | 9.9J- | 133J- | 1570J- | 0.87J- | 36.1J- | 3490J- | 27.9J- | 10.9J- | 158J- | 27800J- | 9820J- | 3350J- | 14000J- | 0.67J- | 27.5J- | 2200J- | 2.8J- | 270J- | 171U | 2.1J- | 17.5J- | 7600J- |
| 07-085-WR3 | total Metals | mg/kg | soil | 10100J- | 11.6J- | 122J- | 1770J- | 1.1J- | 31.4J- | 3940J- | 45.4J- | 15J- | 180J- | 36900J- | 10400J- | 6890J- | 14600J- | 0.41J- | 40.1J- | 3420J- | 2.4U | 286J- | 254U | 2.6J- | 32.7J- | 7910J- |
| 07-085-WR4 | total Metals | mg/kg | soil | 5060J- | 8.5J- | 186J- | 1460J- | 1.1J- | 42.7J- | 4340J- | 19.9J- | 14.9J- | 154J- | 40700J- | 12700J- | 3390J- | 23900J- | 0.52J- | 29.9J- | 2360J- | 3.6J- | 258J- | 206U | 4.1J- | 13.9J- | 8750J- |
| 07-085-WR5 | total Metals | mg/kg | soil | 6910J- | 9.3J- | 161J- | 1460J- | 1.2J- | 25.1J- | 9650J- | 31.4J- | 14J- | 188J- | 37700J- | 10700J- | 6070J- | 14700J- | 0.91J- | 29.1J- | 2310J- | 2.6U | 296J- | 247U | 2.3J- | 25.2J- | 8580J- |
| 07-085-WR6 | total Metals | mg/kg | soil | 7940J- | 7.3J- | 99.5J- | 1240J- | 1.1J- | 14.1J- | 7390J- | 14J- | 14.5J- | 124J- | 44500J- | 8670J- | 3820J- | 14200J- | 0.64J- | 18.2J- | 3880J- | 1.3U | 218J- | 215U | 2.4J- | 32J- | 4120J- |
| 07-085-WR7 | total Metals | mg/kg | soil | 3010J- | 7.3J- | 292J- | 503J- | 1.4J- | 32.2J- | 2960J- | 12.4J- | 22.5J- | 159J- | 42900J- | 12800J- | 1740J- | 22400J- | 0.35J- | 38.4J- | 1390J- | 2.6U | 217J- | 255U | 5J- | 6.6J- | 7760J- |
| 07-085-WR8 | total Metals | mg/kg | soil | 3120J- | 6.4J- | 200J- | 538J- | 1.4J- | 37J- | 3970J- | 12.9J- | 22.2J- | 126J- | 46800J- | 11500J- | 2430J- | 25000J- | 0.73J- | 43.9J- | 1350J- | 2.7J- | 132J- | 249U | 6J- | 9J- | 9210J- |
| 07-085-WR9 | total Metals | mg/kg | soil | 5430J- | 8.1J- | 200J- | 465J- | 1.6J- | 33J- | 4380J- | 26.8J- | 26.7J- | 176J- | 45600J- | 12300J- | 4110J- | 19400J- | 0.43J- | 51.9J- | 1730J- | 1.8U | 157J- | 249U | 4.2J- | 21.9J- | 8730J- |
| 07-087-WR1 | total Metals | mg/kg | soil | 6410J- | 3.7U | 64.5J- | 648J- | 0.73J- | 16.5J- | 14300J- | 52.5J- | 50.4J- | 71.2J- | 19800J- | 4020J- | 6760J- | 107000J- | 0.2J- | 334J- | 3050J- | 18.9J- | 25.6J- | 387U | 29.8J- | 4.8R | 9230J- |
| 07-111-SE1 | total Metals | mg/kg | so | | | | | | | | | | | | | | | | | | | | | | | |

Table 5.0-9 Carpenter-Snow Creek Mine Soil Analytical Results - July 2011

| STATION_ID | ANALYSIS | UNITS | MATRIX | Aluminum | Antimony | Arsenic | Barium | Beryllium | Cadmium | Calcium | Chromium | Cobalt | Copper | Iron | Lead | Magnesium | Manganese | Mercury | Nickel | Potassium | Selenium | Silver | Sodium | Thallium | Vanadium | Zinc |
|------------|--------------|-------|--------|----------|----------|---------|--------|-----------|---------|---------|----------|--------|--------|---------|--------|-----------|-----------|---------|--------|-----------|----------|--------|--------|----------|----------|----------|
| 07-156-WR6 | total Metals | mg/kg | soil | 2260J- | 27.5J- | 297J- | 351J- | 0.58J- | 3.1J- | 597J- | 5.1J- | 1.2U | 86.5J- | 34600J- | 1760J- | 170U | 42.5J- | 0.37J- | 2.9J- | 3610J- | 2.8R | 272J- | 283U | 3.1J- | 15.1J- | 824J- |
| 07-156-WR7 | total Metals | mg/kg | soil | 2690J- | 33.9J- | 321J- | 252J- | 0.61J- | 4J- | 656J- | 7.1J- | 1.9U | 92J- | 34700J- | 2860J- | 608J- | 116J- | 0.24J- | 4.2J- | 2570J- | 3.3R | 180J- | 262U | 1.8U | 16.9J- | 1010J- |
| 07-156-WR9 | total Metals | mg/kg | soil | 6170J- | 13.1J- | 213J- | 77.9J- | 0.79J- | 1J- | 4020J- | 13.4J- | 5.6J- | 46.3J- | 38200J- | 574J- | 2380J- | 227J- | 0.32J- | 9.4J- | 2490J- | 3R | 62.2J- | 275U | 1.2U | 25.6J- | 319J- |
| 07-157-WR1 | total Metals | mg/kg | soil | 11000J- | 6.7J- | 109J- | 115J- | 1.9J- | 5.9J- | 5070J- | 17.5J- | 21.7J- | 142J- | 59700J- | 1290J- | 5260J- | 4750J- | 0.17J- | 21.6J- | 3310J- | 2.9R | 43.7J- | 448J- | 1.3U | 35.7J- | 1180J- |
| 07-157-WR2 | total Metals | mg/kg | soil | 12300J- | 3.8U | 42.1J- | 117J- | 1.7J- | 2.7J- | 5280J- | 34.3J- | 20J- | 135J- | 49100J- | 482J- | 6600J- | 3680J- | 0.16J- | 26.5J- | 4130J- | 3.2R | 17.7J- | 300U | 0.94U | 42.5J- | 618J- |
| 07-174-SE1 | total Metals | mg/kg | soil | 8710J- | 2.9UJ | 73.4J- | 167J- | 1.3J- | 8J- | 2070J- | 30.3J- | 18.2J- | 96.3J- | 27300J- | 1410J- | 5580J- | 3330J- | 0.12R | 20.4J- | 998J- | 4.5R | 16.6J- | 267U | 0.39U | 23.5J- | 2070J- |
| 07-174-SE2 | total Metals | mg/kg | soil | 6590J- | 1.7UJ | 27J- | 91.1J- | 2J- | 12.4J- | 1320J- | 16.6J- | 14.4J- | 176J- | 18200J- | 635J- | 2770J- | 5610J- | 0.03J- | 18.6J- | 930J- | 0.82U | 17.7J- | 345U | 3.3R | 14.1J- | 1420J- |
| 07-174-WR1 | total Metals | mg/kg | soil | 21700J- | 3.1U | 38.6J- | 252J- | 2.5J- | 6.7J- | 10800J- | 194J- | 28.2J- | 133J- | 71500J- | 617J- | 15300J- | 2480J- | 0.14J- | 108J- | 6410J- | 3R | 4.8J- | 462J- | 0.98U | 74.4J- | 1200J- |
| BLK | total Metals | mg/kg | soil | 20U | 6U | 0.18U | 20U | 0.5U | 0.5U | 500U | 1U | 5U | 2.5U | 10U | 1U | 500U | 1.5U | 0.1U | 4U | 8.7U | 0.28U | 1U | 500U | 2.5U | 0.04U | 6U |
| DUP-01 | total Metals | mg/kg | soil | 5150J- | 5.8UJ | 32.9J- | 421J- | 1.7J- | 91.8J- | 15100J- | 23.6J- | 91.7J- | 30.9J- | 20700J- | 439J- | 9290J- | 74900J- | 0.24J- | 476J- | 1050J- | 12.3J- | 15.3J- | 225U | 15.4J- | 8R | 45800J- |
| DUP-16 | total Metals | mg/kg | soil | 2330J- | 10.7J- | 42.1J- | 293J- | 0.31J- | 387J- | 2260J- | 19.4J- | 97.7J- | 113J- | 11800J- | 6880J- | 1170J- | 167000J- | 0.36J- | 915J- | 942J- | 45.1J- | 175J- | 190U | 69J- | 4.4R | 102000J- |
| DUP-18 | total Metals | mg/kg | soil | 8650J- | 3.9UJ | 56.6J- | 213J- | 1.4J- | 8.7J- | 2270J- | 22.1J- | 15.9J- | 2230J- | 48300J- | 7830J- | 3840J- | 5340J- | 0.11J- | 15.5J- | 1920J- | 0.38U | 68.3J- | 331U | 0.81U | 39.8J- | 1540J- |
| MH3AC4BLK | total Metals | mg/kg | soil | 20U | 6U | 0.16U | 20U | 0.5U | 0.5U | 500U | 1U | 5U | 2.5U | 10U | -0.12J | 500U | 1.5U | -0.034J | 4U | 500U | 3.5U | 1U | 500U | 2.5U | 0.11U | 6U |
| MH3AE4BLK | total Metals | mg/kg | soil | -0.75J | 6U | 1U | 20U | 0.5U | 0.5U | 500U | 1U | 5U | 2.5U | 10U | 1U | 500U | 1.5U | -0.019J | 4U | 9.3U | 3.5U | 1U | 500U | 2.5U | 0.13U | 6U |
| MH3AG5BLK | total Metals | mg/kg | soil | 20U | 6U | 0.27U | 20U | 0.5U | 0.5U | 500U | 1U | 5U | 2.5U | 10U | 1U | 500U | 1.5U | 0.1U | 4U | 8.1U | 3.5U | 1U | 500U | 2.5U | 0.11U | 6U |
| MH3AH2BLK | total Metals | mg/kg | soil | 20U | 6U | 1U | 20U | 0.5U | 0.5U | 500U | 1U | 5U | 2.5U | 10U | 1U | 500U | 1.5U | -0.026J | 4U | 500U | 3.5U | 1U | 500U | 2.5U | 0.12U | 6U |
| OPP-03 | total Metals | mg/kg | soil | 11500J- | 4U | 61.6J- | 1210J- | 1.1J- | 16.6J- | 4910J- | 49.9J- | 14.9J- | 64.5J- | 31300J- | 3560J- | 6100J- | 8190J- | 0.37J- | 40J- | 3640J- | 0.73U | 53.6J- | 234U | 1.1U | 35.2J- | 4120J- |
| OPP-04 | total Metals | mg/kg | soil | 12200J- | 6.7J- | 74J- | 292J- | 1.4J- | 14.3J- | 3410J- | 24.1J- | 21.7J- | 3300J- | 53900J- | 7550J- | 3900J- | 3780J- | 0.12J- | 16.5J- | 2410J- | 0.3U | 57J- | 473J- | 1U | 43J- | 1750J- |
| OPP-05 | total Metals | mg/kg | soil | 12800J- | 6.7J- | 64.9J- | 291J- | 1.5J- | 19.4J- | 4540J- | 25.3J- | 19.7J- | 4110J- | 63300J- | 8670J- | 4320J- | 5510J- | 0.04J- | 18.4J- | 2810J- | 0.24U | 53.7J- | 427J- | 0.92U | 47.5J- | 2030J- |
| OPP-06 | total Metals | mg/kg | soil | 15500J- | 2.7U | 25.6J- | 71J- | 2.4J- | 3.6J- | 4060J- | 54.7J- | 19J- | 91.9J- | 59700J- | 1330J- | 6620J- | 2070J- | 0.1J- | 38.1J- | 1750J- | 3.2R | 1.2J- | 317U | 0.48U | 39.9J- | 1480J- |
| OPP-09 | total Metals | mg/kg | soil | 4890J- | 6.4UJ | 62.2J- | 215J- | 0.96J- | 7.5J- | 1330J- | 13.6J- | 6.5J- | 1540J- | 49700J- | 4620J- | 2040J- | 1990J- | 0.38J- | 8.6J- | 1650J- | 0.62U | 49.3J- | 440U | 0.61U | 26.5J- | 1240J- |
| OPP-10 | total Metals | mg/kg | soil | 1930J- | 0.81UJ | 36.9J- | 550J- | 0.43R | 77.9J- | 18000J- | 48.6J- | 151J- | 30.1J- | 63800J- | 878J- | 2480J- | 39900J- | 0.52R | 1170J- | 2300J- | 149J- | 31.3J- | 328U | 256J- | 4.3R | 28600J- |
| OPP-13 | total Metals | mg/kg | soil | 4040J- | 4.6UJ | 53.6J- | 319J- | 0.94J- | 10.7J- | 2260J- | 12.3J- | 8.3J- | 4560J- | 40800J- | 8630J- | 1950J- | 2270J- | 0.02J- | 7.6J- | 1740J- | 0.36U | 65J- | 390U | 2.8R | 44J- | 1220J- |

Note: Data Qualifier Definitions Listed Below:

- U The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
- J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
- J+ The result is an estimated quantity, but the results may be biased high.
- J- The result is an estimated quantity, but the results may be biased low.
- R The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be presented in the sample.
- UJ The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

Table 5.0-10 Habitat Assessment Scores - Carpenter-Snow Creek Mining District-2011

| Habitat Parameter | Habitat Assessment Scores | | | | | | | | | | |
|---|---------------------------|---------|---------|---------|---------|----------|---------|---------|----------|----------|--------|
| | CSC-101 | CSC-102 | CSC-103 | CSC-104 | CSC-105 | CSC-111A | CSC-113 | CSC-116 | CSC-116A | CSC-120A | ST010A |
| Epifaunal Substrate/ Available Cover | 16 | 18 | 17 | 16 | 20 | 11 | 13 | 18 | 13 | 18 | 16 |
| Embeddedness | 20 | 20 | 12 | 16 | 19 | 11 | 10 | 18 | 14 | 20 | 19 |
| Velocity/Depth Regime | 20 | 20 | 10 | 10 | 13 | 10 | 10 | 10 | 10 | 14 | 15 |
| Sediment Deposition | 19 | 20 | 15 | 17 | 20 | 10 | 9 | 15 | 13 | 17 | 19 |
| Channel Flow Status | 17 | 19 | 13 | 15 | 20 | 6 | 8 | 13 | 10 | 15 | 18 |
| Channel Alteration | 15 | 19 | 19 | 17 | 20 | 8 | 8 | 14 | 13 | 15 | 13 |
| Frequency of Riffles or Bends | 17 | 19 | 20 | 18 | 20 | 16 | 10 | 17 | 11 | 17 | 19 |
| Bank Stability | | | | | | | | | | | |
| Left Bank | 10 | 10 | 9 | 5 | 10 | 3 | 2 | 9 | 6 | 9 | 10 |
| Right Bank | 10 | 10 | 9 | 7 | 10 | 3 | 2 | 8 | 5 | 10 | 10 |
| Vegetative Protection | | | | | | | | | | | |
| Left Bank | 10 | 10 | 8 | 8 | 10 | 4 | 0 | 9 | 5 | 9 | 10 |
| Right Bank | 9 | 10 | 8 | 5 | 10 | 3 | 1 | 8 | 5 | 10 | 8 |
| Riparian Vegetative Zone Width | | | | | | | | | | | |
| Left Bank | 10 | 10 | 5 | 8 | 10 | 6 | 1 | 9 | 5 | 9 | 10 |
| Right Bank | 6 | 8 | 9 | 4 | 10 | 7 | 1 | 9 | 5 | 9 | 5 |
| Total Score | 179 | 193 | 154 | 146 | 192 | 98 | 75 | 157 | 115 | 172 | 172 |

Notes:

| |
|---|
| Green Shading = Optimal habitat score |
| Blue Shading = Suboptimal habitat score |
| Yellow Shading = Marginal habitat score |
| Red Shading = Poor habitat score |

Table 6.0-1 Surface Water Detection Limits, Methods, and Water Quality Standards for Aquatic Life

| Target Analytes | EPA Method ¹ | Instrument | Fraction Evaluated | Sample Volume Req'd (ml) | Preservation | Holding Time | Laboratory MDL, ug/L | Laboratory PQL, ug/L | Montana Numeric Water Quality Standards - Aquatic Life Standards ³ | | National Ambient Water Quality Criteria Standards (Aquatic Life) ⁴ | |
|----------------------------|-------------------------|--------------------------------|--------------------|----------------------------|---------------------------|--------------|----------------------|----------------------|---|------------------|---|---------|
| | | | | | | | | | Acute | Chronic | Acute | Chronic |
| Aluminum (Al) | 200.7 | ICP-OE | TR & Diss | Diss - 250ml TR - 500ml | HNO ₃ to pH <2 | 180 days | 20 | 50 | 750 | 87 | 750 | 87 |
| Beryllium (Be) | 200.7 | ICP-OE | TR & Diss | | | | 2 | 5 | N/A | N/A | N/A | N/A |
| Calcium (Ca) | 200.7 | ICP-OE | TR & Diss | | | | 100 | 250 | N/A | N/A | N/A | N/A |
| Iron (Fe) | 200.7 | ICP-OE | TR & Diss | | | | 100 | 250 | N/A | 1000 | N/A | 1000 |
| Chromium (Cr) | 200.7 | ICP-OE | TR & Diss | | | | 2 | 5 | N/A | N/A | 16 | 11 |
| Magnesium (Mg) | 200.7 | ICP-OE | TR & Diss | | | | 100 | 250 | N/A | N/A | N/A | N/A |
| Manganese (Mn) | 200.7 | ICP-OE | TR & Diss | | | | 2 | 5 | N/A | N/A | N/A | N/A |
| Strontium (Sr) | 200.7 | ICP-OE | TR & Diss | | | | 2 | 10 | N/A | N/A | N/A | N/A |
| Silica (SiO ₂) | 200.7 | ICP-OE | TR & Diss | | | | 250 | 1000 | N/A | N/A | N/A | N/A |
| Zinc (Zn) | 200.7 | ICP-OE | TR & Diss | | | | 10 | 20 | 37 @ 25 mg/L H | 37 @ 25 mg/L H | 120 | 120 |
| Calculated Hardness | 2340B ² | Calculated from 200.7, Ca & Mg | TR & Diss | - | | | - | - | N/A | N/A | N/A | N/A |
| Antimony (Sb) | 200.8 | ICP-MS | TR & Diss | Diss - 250ml TR - 500ml | HNO ₃ to pH <2 | 180 days | 0.5 | 1 | N/A | N/A | N/A | N/A |
| Arsenic (As) | 200.8 | ICP-MS | TR & Diss | | | | 0.5 | 2 | 340 | 150 | 340 | 150 |
| Cadmium (Cd) | 200.8 | ICP-MS | TR & Diss | | | | 0.1 | 0.2 | 0.52@25 mg/L H | 0.097@25 mg/L H | 2 | 0.25 |
| Copper (Cu) | 200.8 | ICP-MS | TR & Diss | | | | 0.5 | 1 | 3.79@25 mg/L H | 2.85 @25 mg/L H | Freshwater criteria calculated using the Biotic Ligand Model | |
| Lead (Pb) | 200.8 | ICP-MS | TR & Diss | | | | 0.1 | 0.2 | 13.98@25 mg/L H | 0.545 @25 mg/L H | 65 | 2.5 |
| Nickel (Ni) | 200.8 | ICP-MS | TR & Diss | | | | 0.5 | 1 | 125 @25 mg/L H | 16.1 @25 mg/L H | 470 | 52 |
| Selenium (Se) | 200.8 | ICP-MS | TR & Diss | | | | 0.5 | 1 | 20 | 5 | N/A | 5 |
| Silver (Ag) | 200.8 | ICP-MS | TR & Diss | | | | 0.1 | 0.5 | 0.374 @25 mg/L H | N/A | 3.2 | N/A |
| Thallium (Tl) | 200.8 | ICP-MS | TR & Diss | | | | 0.5 | 1 | N/A | N/A | N/A | N/A |
| Dissolved Organic Carbon | 415.3 | Combustion/Non-dispersive IR | Diss | 250 ml | Phosphoric acid, pH<2 | 28 days | 1 mg/L | 1 mg/L | N/A | N/A | N/A | N/A |
| Alkalinity | 160.1 | Mettler AT | Total | 250 ml | Cooled to 4°C +/- 2 | 14 days | 5 | 5 | N/A | N/A | N/A | 2000 |
| Chloride | 300.0 ⁵ | Ion Chromatography | Diss | 250 ml | Cooled to 4°C +/- 2 | 28 days | 1.0 mg/L | 2.0 mg/L | N/A | N/A | 860000 | 230000 |
| Fluoride | 300.0 ⁵ | | Diss | | | | 0.1 mg/L | 0.2 mg/L | N/A | N/A | N/A | N/A |
| Sulfate | 300.0 ⁵ | | Diss | | | | 2 mg/L | 5 mg/L | N/A | N/A | N/A | N/A |

Diss = Dissolved metals fraction, i.e. source water filtered through 0.45 um filter prior to preservation (acidified).

TR = Total recoverable metals, source water, acidified/preserved).

MDL: Method Detection Limit, statistically determined from the deviation in a series of seven low level (3-5x the anticipated MDL) analyses, treated exactly as unknown samples for analysis. 40 CFR Chapter 1, Part 136, Appendix B

PQL: Practical Quantitation Level. Target analyte concentrations between PQL and MDL qualified as estimated, 'T, due to potential high variability. 40 CFR Parts 9, 141 and 142 [WH-FRL-6934-9]

¹EPA's *Methods for the Determination of Metals in Environmental Samples*, Supplement I, May 1994 (Series 200 Methods)

²Standard Methods for the Examination of Water and Wastewater, 18th Edition, 1992

³ Montana Numeric Water Quality Standards (Circular WQB-7) Montana Department of Environmental Quality - Planning, Prevention, and Assistance Division - Water Quality Standards Section

⁴ National Recommended Water Quality Criteria for Aquatic Life based on 100 mg/L hardness - <http://water.epa.gov/scitech/swguidance/standards/current/index.cfm#atable>

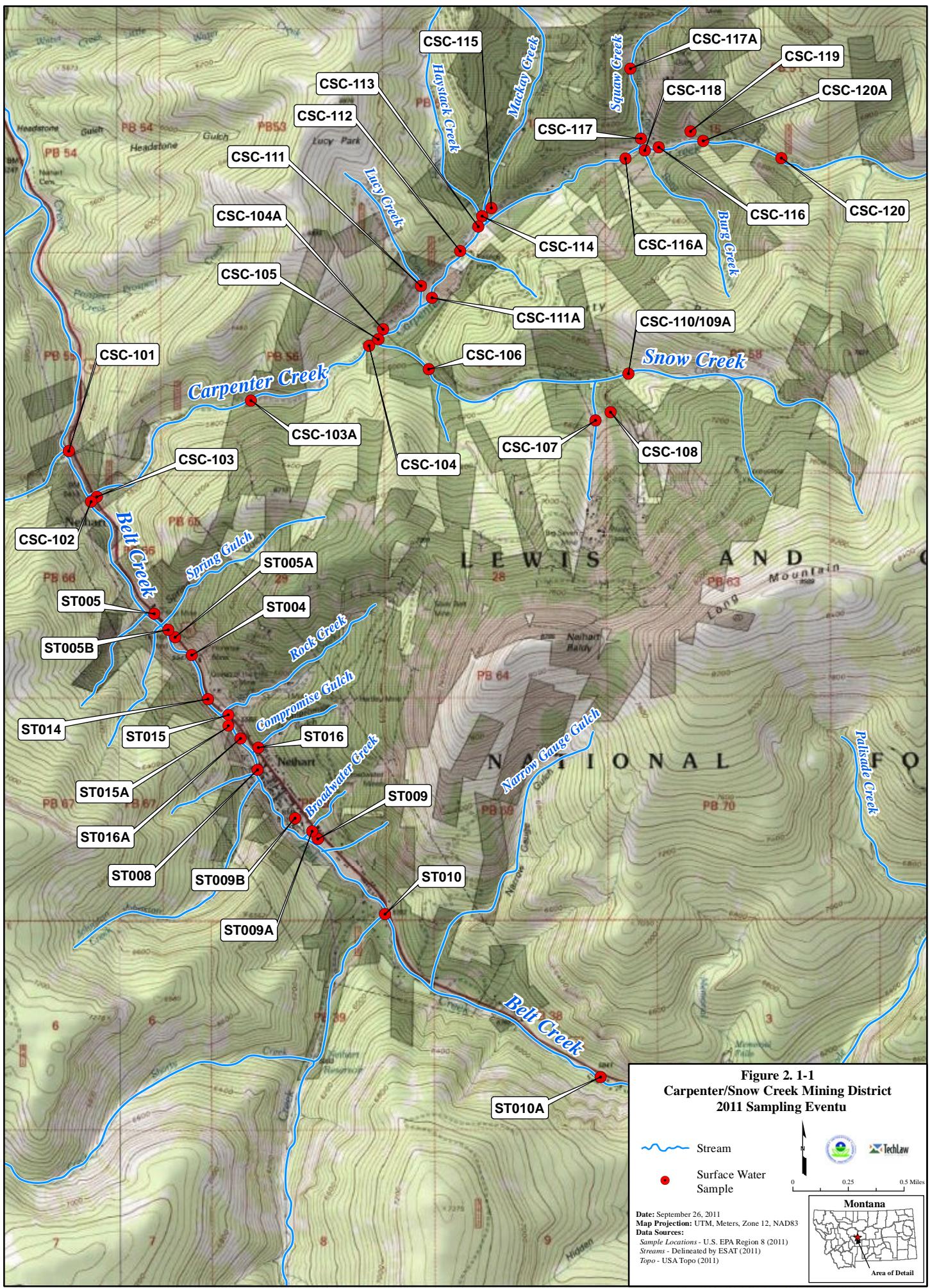
⁵EPA's *Test Methods for Determining Solid Waste*, SW-846

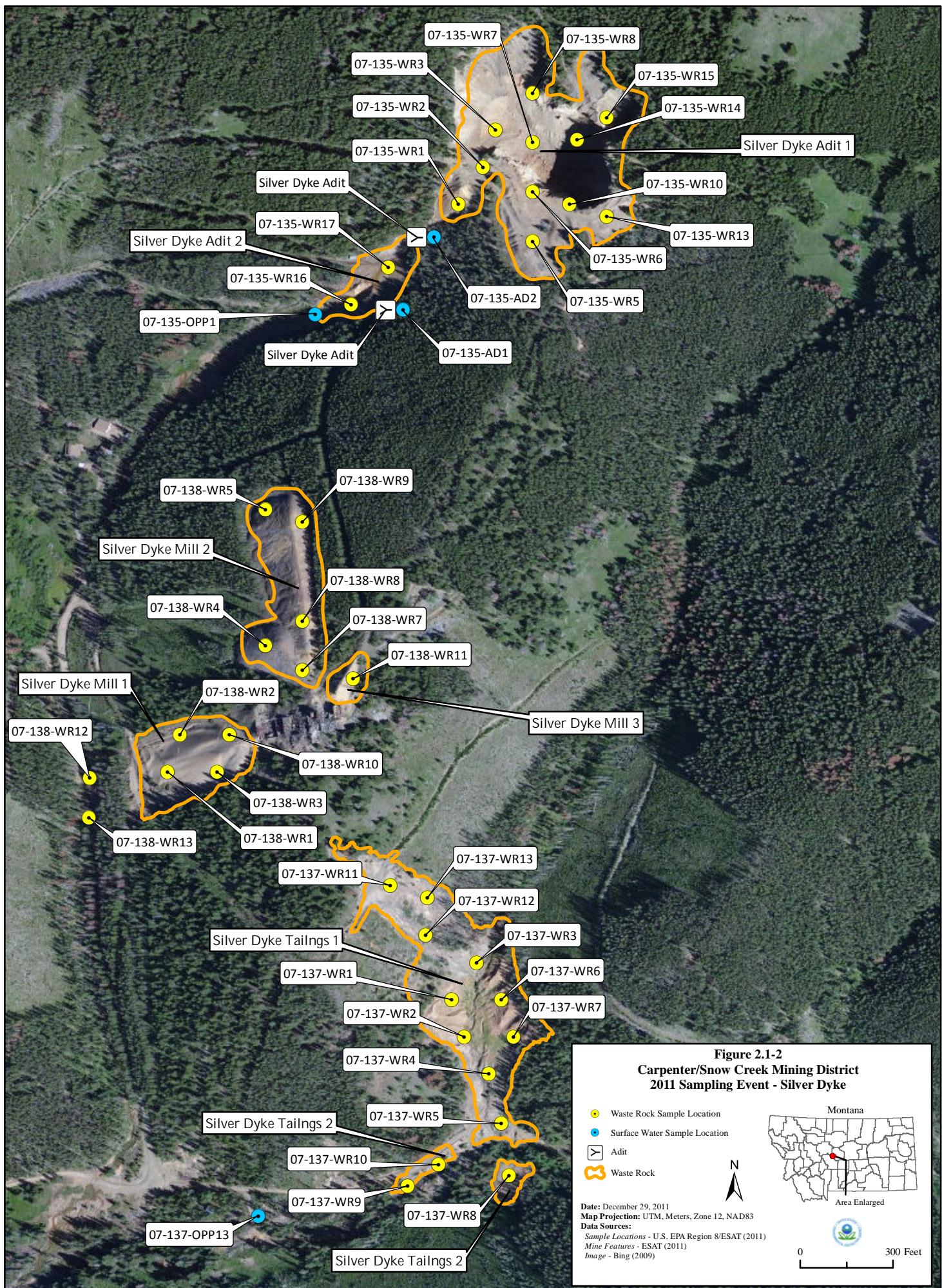
⁶EPA's *Methods for Chemical Analysis of Water and Wastes*, June 2003

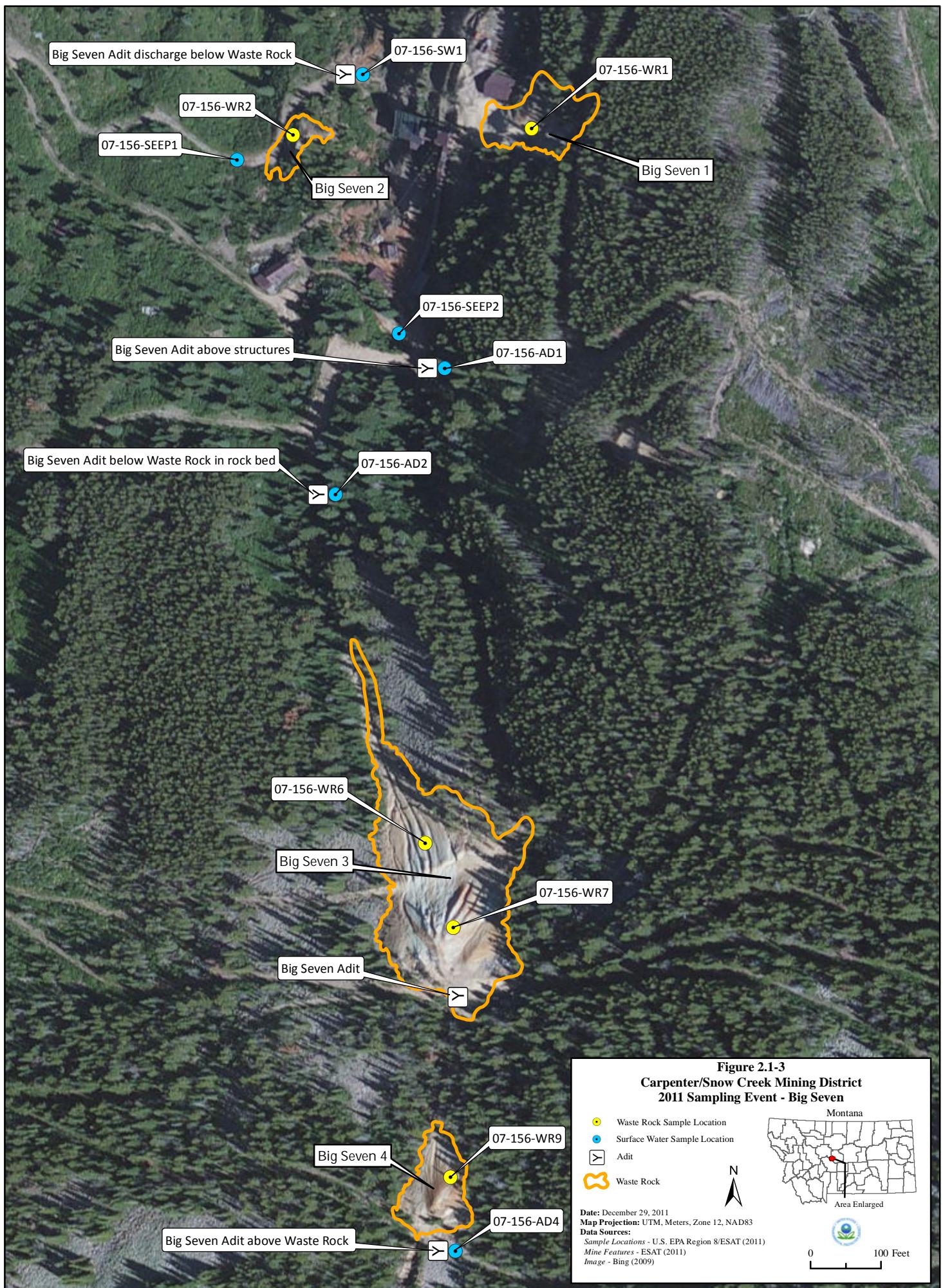
⁷Water supply limits for organic chemicals taken from CDPHE EWQCC, Reg. 31. Lower value of given range is reported.

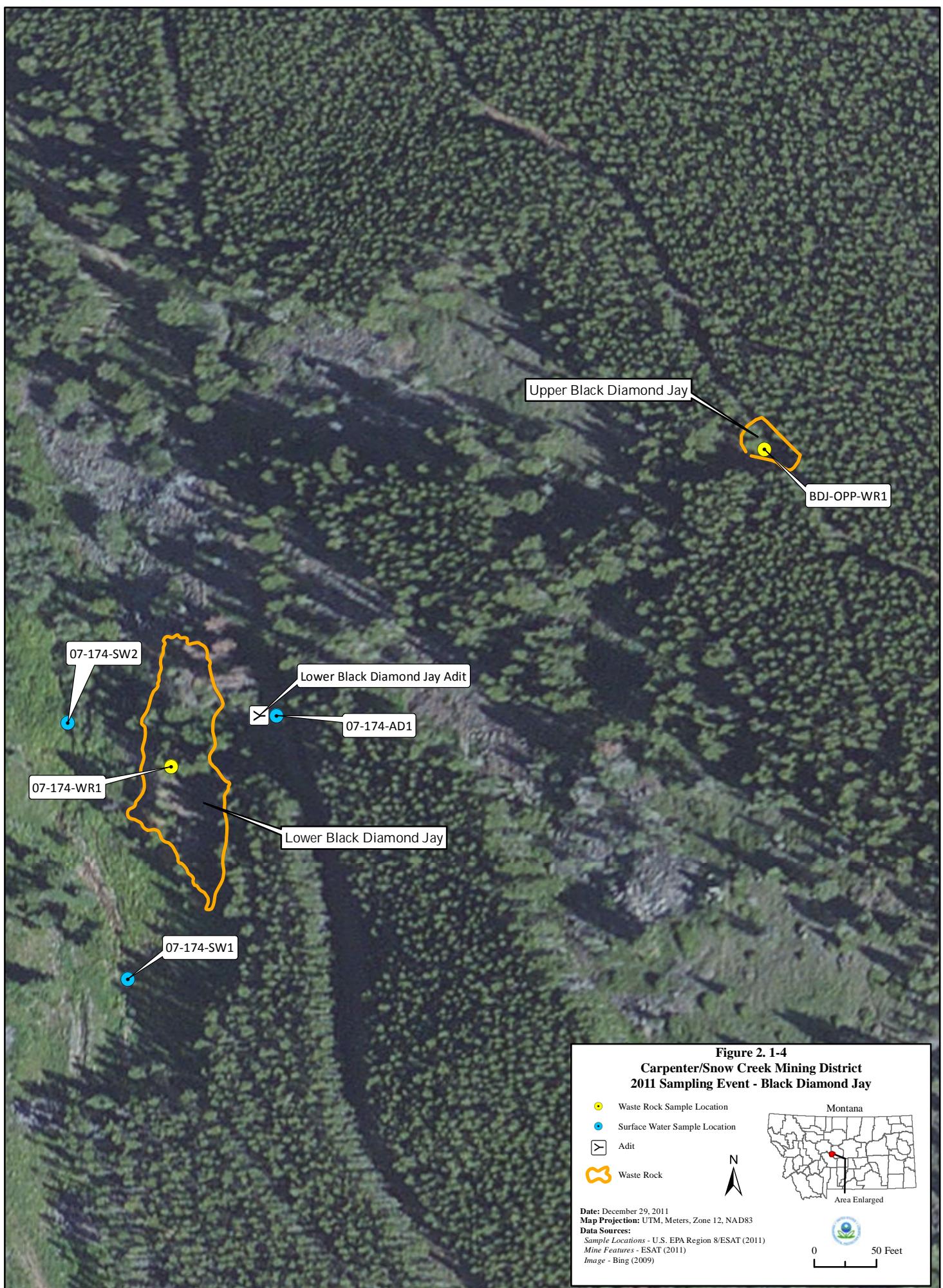
Sampling Activities Report
Carpenter Creek -Cascade County, Montana
Final, Revision 0

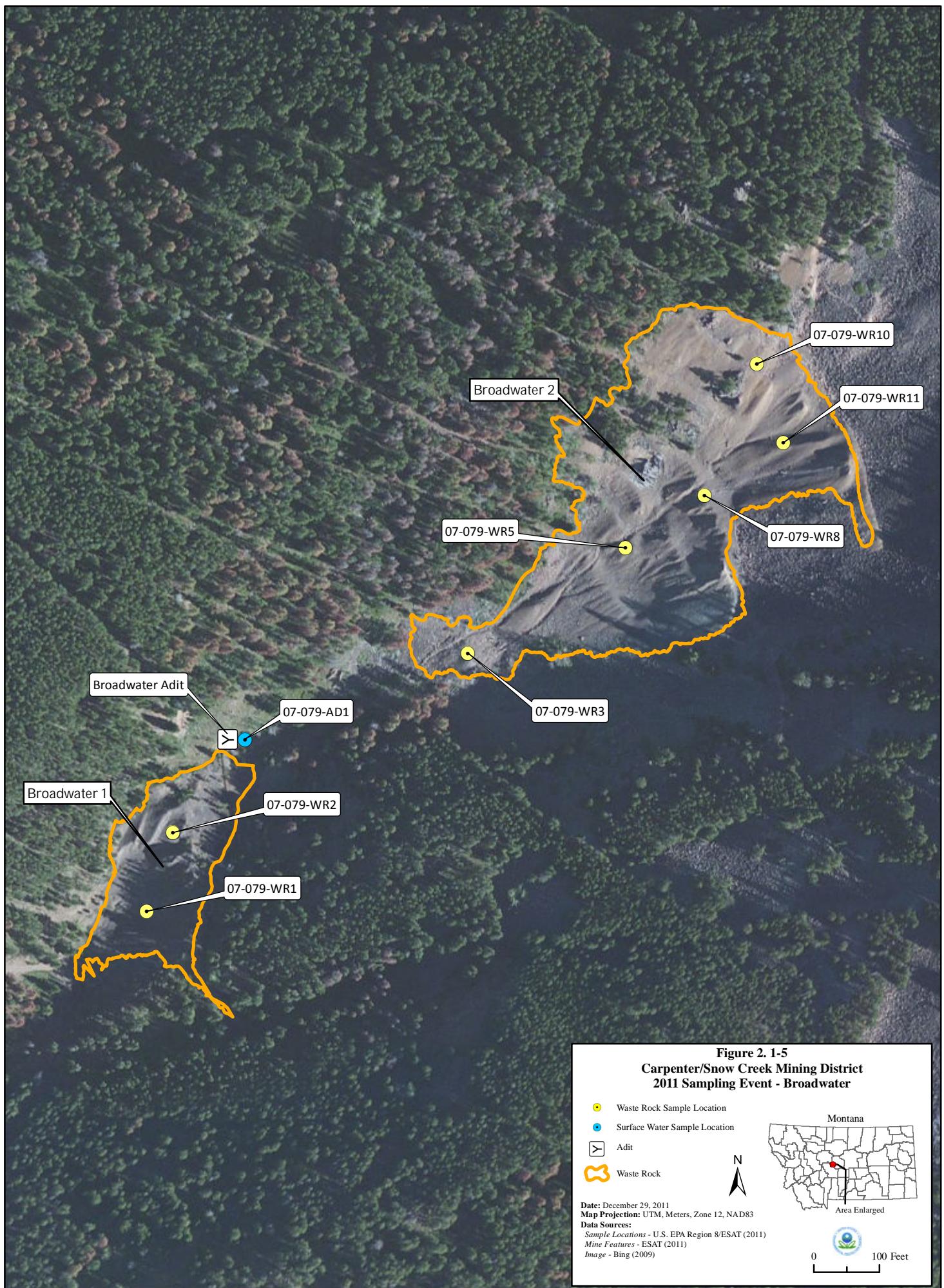
Figures

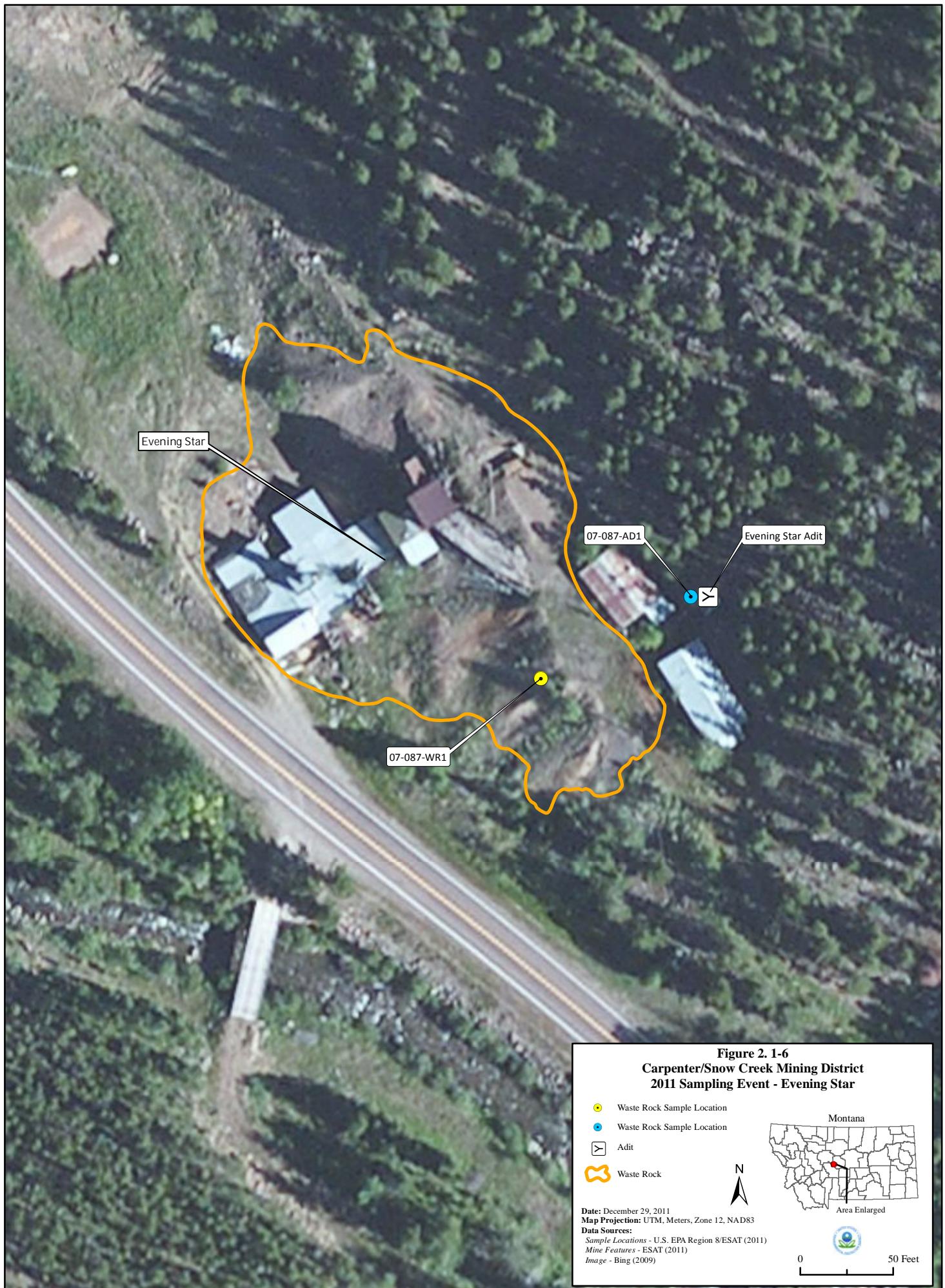


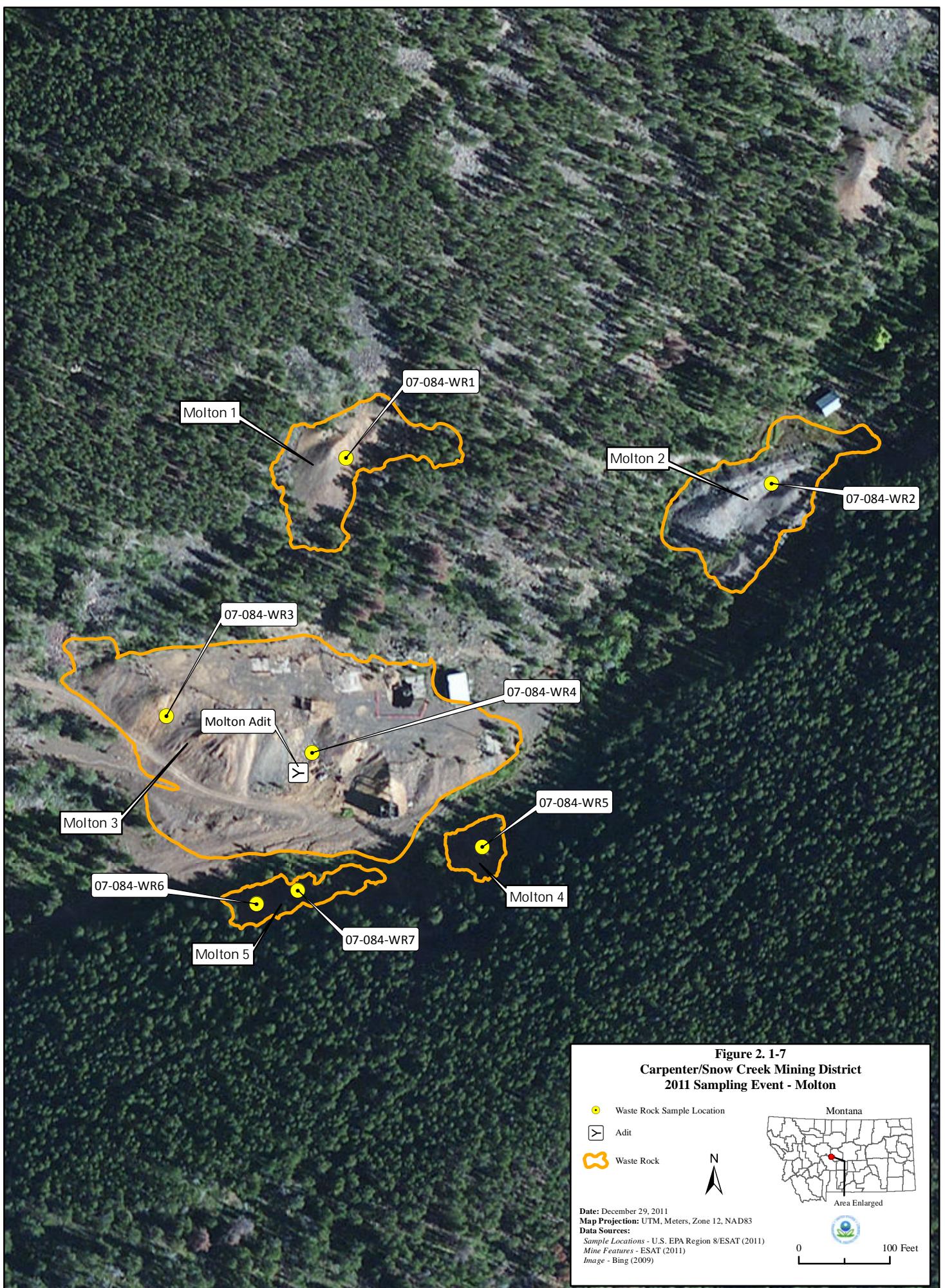




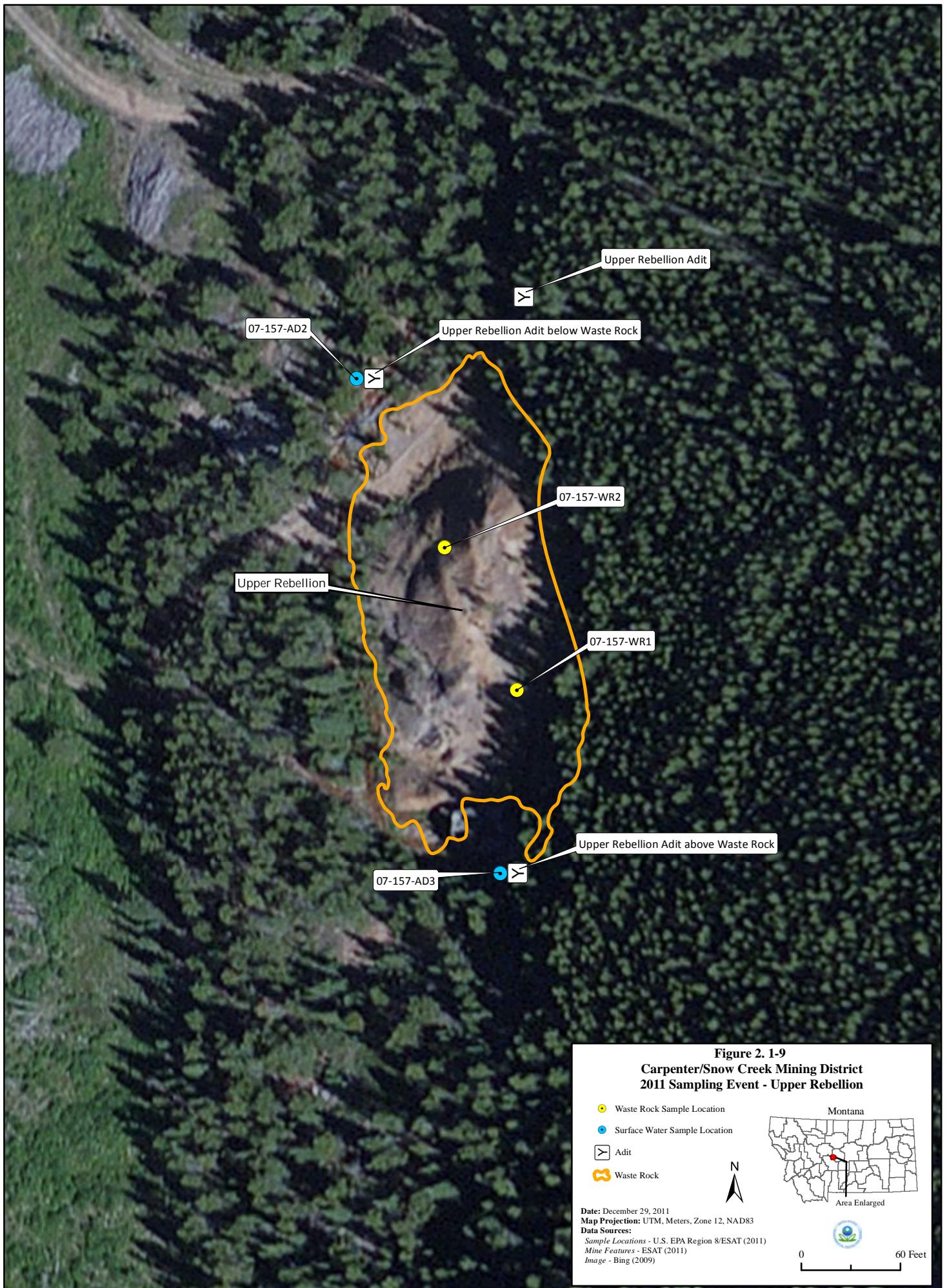


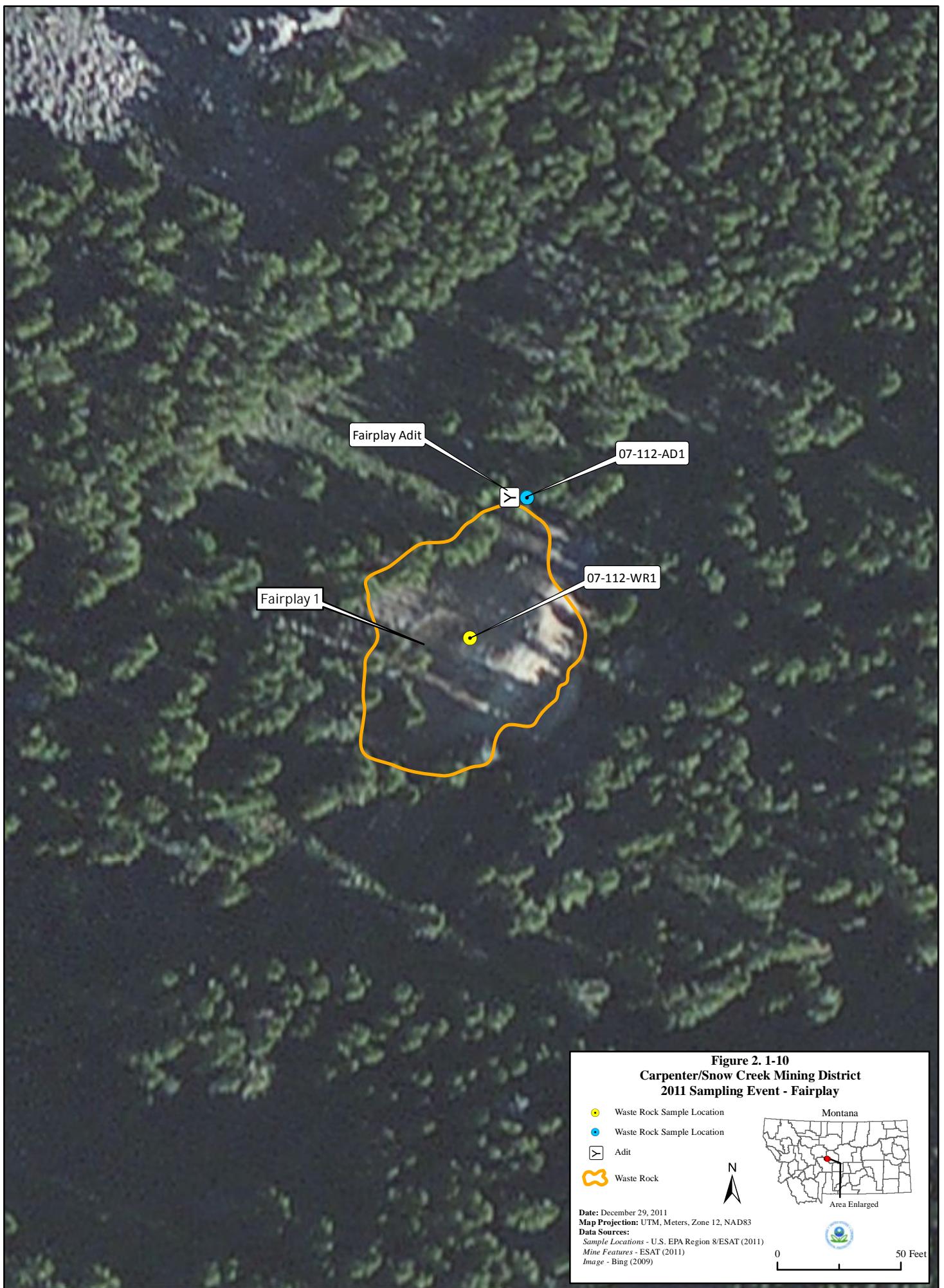












Sampling Activities Report
Carpenter Creek -Cascade County, Montana
Final, Revision 0

Appendix A
Carpenter Creek 2011 Surface Water Toxicity Test

Sampling Activities Report
Carpenter Creek -Cascade County, Montana
Final, Revision 0

Appendix B
Carpenter Creek 2011 Sediment Toxicity Test

Sampling Activities Report
Carpenter Creek -Cascade County, Montana
Final, Revision 0

Attachment A
Flow Data Sheets



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

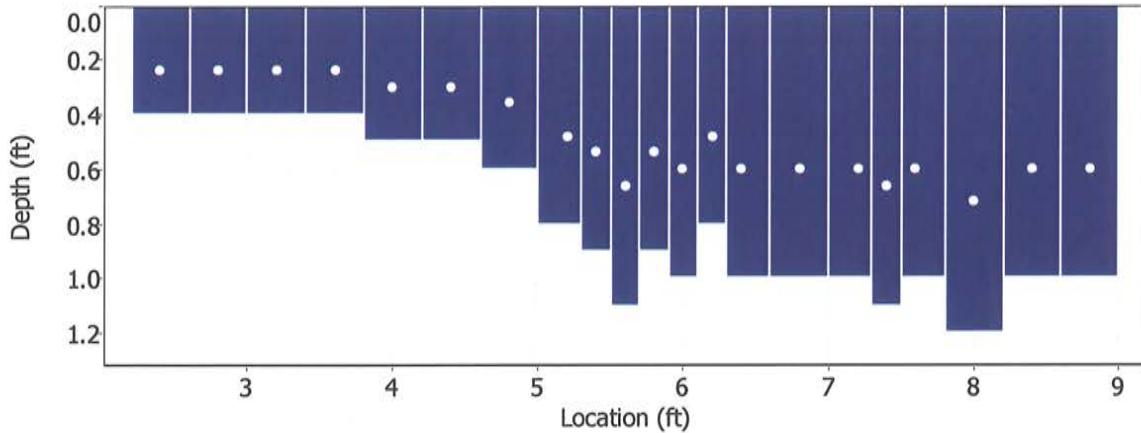
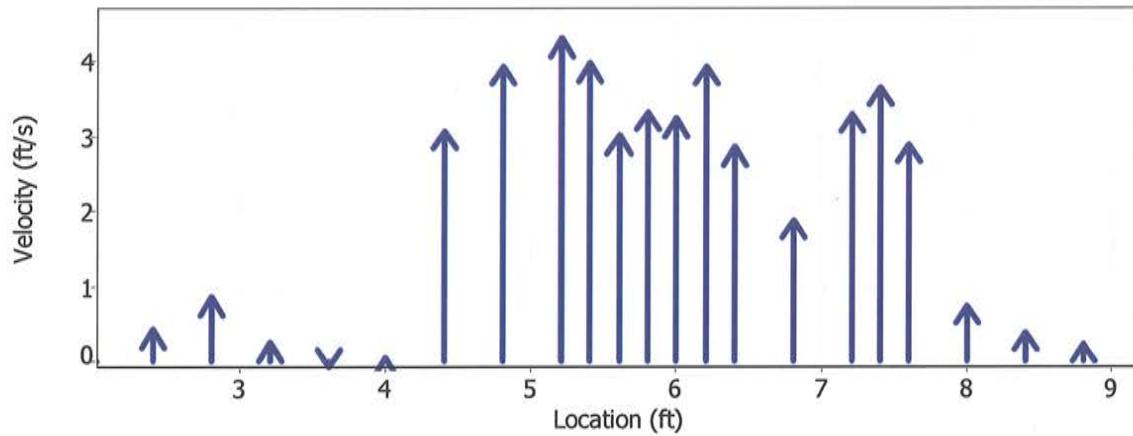
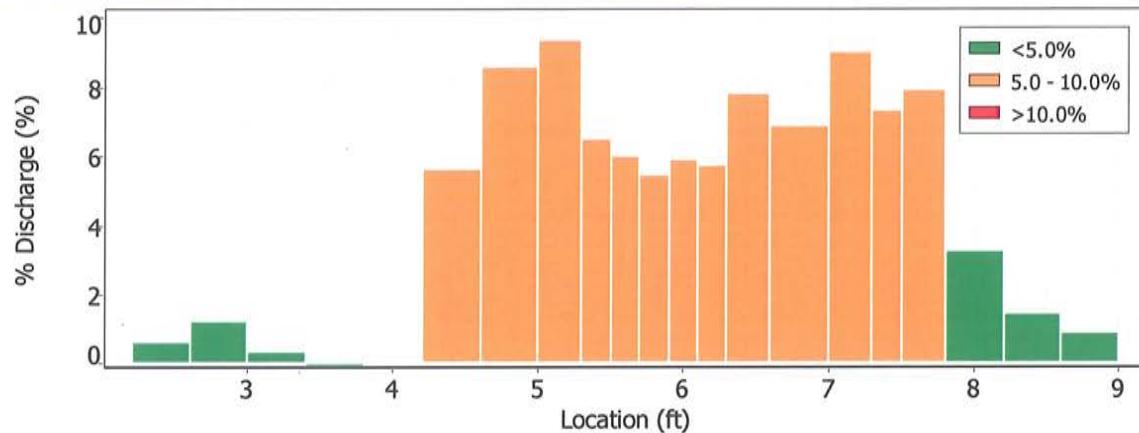
| File Information | | | | Site Details | | | | | | | | | | | | | |
|----------------------|-------------|------------------------------|--------|-----------------------|------|-------|---------|----------|---------|-------------|---------|------|--|--|--|--|--|
| System Information | | Units | | Discharge Uncertainty | | | | | | | | | | | | | |
| Sensor Type | FlowTracker | Distance | ft | Category | | | | | | | | | | | | | |
| Serial # | P3514 | Velocity | ft/s | ISO | | | | | | | | | | | | | |
| CPU Firmware Version | 3.7 | Area | ft^2 | Stats | | | | | | | | | | | | | |
| Software Ver | 2.20 | Discharge | cfs | Accuracy | | | | | | | | | | | | | |
| Summary | | Discharge Uncertainty | | | | | | | | 1.0% | | | | | | | |
| Averaging Int. | 40 | # Stations | 23 | Depth | | | | | | 0.3% | | | | | | | |
| Start Edge | REW | Total Width | 7.199 | Velocity | | | | | | 1.6% | | | | | | | |
| Mean SNR | 42.7 dB | Total Area | 5.259 | Width | | | | | | 0.1% | | | | | | | |
| Mean Temp | 38.07 °F | Mean Depth | 0.731 | Method | | | | | | 2.0% | | | | | | | |
| Disch. Equation | Mid-Section | Mean Velocity | 2.0942 | # Stations | | | | | | 2.2% | | | | | | | |
| | | Overall | | | | | | | | 3.5% | | | | | | | |
| | | 11.0136 | | | | | | | | 6.7% | | | | | | | |
| Measurement Results | | | | | | | | | | | | | | | | | |
| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q | | | | | |
| 0 | 09:50 | 2.00 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 | | | | | |
| 1 | 09:50 | 2.40 | 0.6 | 0.400 | 0.6 | 0.160 | 0.4364 | 1.00 | 0.4364 | 0.160 | 0.0698 | 0.6 | | | | | |
| 2 | 09:51 | 2.80 | 0.6 | 0.400 | 0.6 | 0.160 | 0.8645 | 1.00 | 0.8645 | 0.160 | 0.1383 | 1.3 | | | | | |
| 3 | 09:53 | 3.20 | 0.6 | 0.400 | 0.6 | 0.160 | 0.2608 | 1.00 | 0.2608 | 0.160 | 0.0417 | 0.4 | | | | | |
| 4 | 09:56 | 3.60 | 0.6 | 0.400 | 0.6 | 0.160 | -0.0696 | 1.00 | -0.0696 | 0.160 | -0.0111 | -0.1 | | | | | |
| 5 | 09:57 | 4.00 | 0.6 | 0.500 | 0.6 | 0.200 | 0.0509 | 1.00 | 0.0509 | 0.200 | 0.0102 | 0.1 | | | | | |
| 6 | 09:58 | 4.40 | 0.6 | 0.500 | 0.6 | 0.200 | 3.0840 | 1.00 | 3.0840 | 0.200 | 0.6167 | 5.6 | | | | | |
| 7 | 09:59 | 4.80 | 0.6 | 0.600 | 0.6 | 0.240 | 3.9429 | 1.00 | 3.9429 | 0.240 | 0.9462 | 8.6 | | | | | |
| 8 | 10:00 | 5.20 | 0.6 | 0.800 | 0.6 | 0.320 | 4.3038 | 1.00 | 4.3038 | 0.240 | 1.0334 | 9.4 | | | | | |
| 9 | 10:10 | 5.40 | 0.6 | 0.900 | 0.6 | 0.360 | 3.9770 | 1.00 | 3.9770 | 0.180 | 0.7157 | 6.5 | | | | | |
| 10 | 10:01 | 5.60 | 0.6 | 1.100 | 0.6 | 0.440 | 3.0148 | 1.00 | 3.0148 | 0.220 | 0.6632 | 6.0 | | | | | |
| 11 | 10:11 | 5.80 | 0.6 | 0.900 | 0.6 | 0.360 | 3.3360 | 1.00 | 3.3360 | 0.180 | 0.6003 | 5.5 | | | | | |
| 12 | 10:02 | 6.00 | 0.6 | 1.000 | 0.6 | 0.400 | 3.2428 | 1.00 | 3.2428 | 0.200 | 0.6490 | 5.9 | | | | | |
| 13 | 10:13 | 6.20 | 0.6 | 0.800 | 0.6 | 0.320 | 3.9403 | 1.00 | 3.9403 | 0.160 | 0.6302 | 5.7 | | | | | |
| 14 | 10:03 | 6.40 | 0.6 | 1.000 | 0.6 | 0.400 | 2.8688 | 1.00 | 2.8688 | 0.300 | 0.8593 | 7.8 | | | | | |
| 15 | 10:04 | 6.80 | 0.6 | 1.000 | 0.6 | 0.400 | 1.8934 | 1.00 | 1.8934 | 0.400 | 0.7572 | 6.9 | | | | | |
| 16 | 10:05 | 7.20 | 0.6 | 1.000 | 0.6 | 0.400 | 3.3163 | 1.00 | 3.3163 | 0.300 | 0.9961 | 9.0 | | | | | |
| 17 | 10:14 | 7.40 | 0.6 | 1.100 | 0.6 | 0.440 | 3.6703 | 1.00 | 3.6703 | 0.220 | 0.8074 | 7.3 | | | | | |
| 18 | 10:06 | 7.60 | 0.6 | 1.000 | 0.6 | 0.400 | 2.9068 | 1.00 | 2.9068 | 0.300 | 0.8707 | 7.9 | | | | | |
| 19 | 10:07 | 8.00 | 0.6 | 1.200 | 0.6 | 0.480 | 0.7539 | 1.00 | 0.7539 | 0.480 | 0.3619 | 3.3 | | | | | |
| 20 | 10:08 | 8.40 | 0.6 | 1.000 | 0.6 | 0.400 | 0.3993 | 1.00 | 0.3993 | 0.400 | 0.1597 | 1.4 | | | | | |
| 21 | 10:09 | 8.80 | 0.6 | 1.000 | 0.6 | 0.400 | 0.2444 | 1.00 | 0.2444 | 0.400 | 0.0978 | 0.9 | | | | | |
| 22 | 10:09 | 9.20 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 | | | | | |

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File InformationFile Name
Start Date and Time109110A.WAD
2011/06/29 09:50:25**Site Details**Site Name
Operator(s)109110A
RB



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

File Name 109110A.WAD
Start Date and Time 2011/06/29 09:50:25

Site Details

Site Name 109110A
Operator(s) RB

Quality Control

| St | Loc | %Dep | Message |
|----|------|------|----------------------------|
| 4 | 3.60 | 0.6 | High angle: 172 |
| 15 | 6.80 | 0.6 | High standard error: 0.174 |
| 17 | 7.40 | 0.6 | High standard error: 0.192 |
| 19 | 8.00 | 0.6 | High standard error: 0.169 |
| 21 | 8.80 | 0.6 | High angle: -41 |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

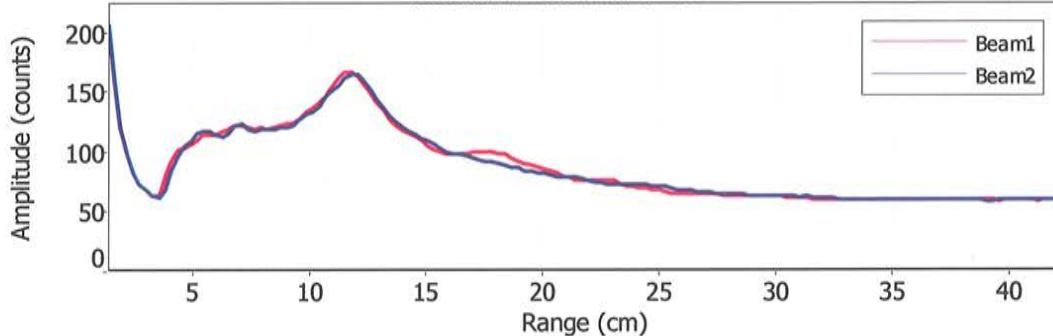
File Name 109110A.WAD
Start Date and Time 2011/06/29 09:50:25

Site Details

Site Name 109110A
Operator(s) RB

Automatic Quality Control Test (BeamCheck)

Wed Jun 29 09:49:22 MDT 2011



- Noise level check - Pass
- SNR check - Pass
- Peak location check - Pass
- Peak shape check - Pass



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

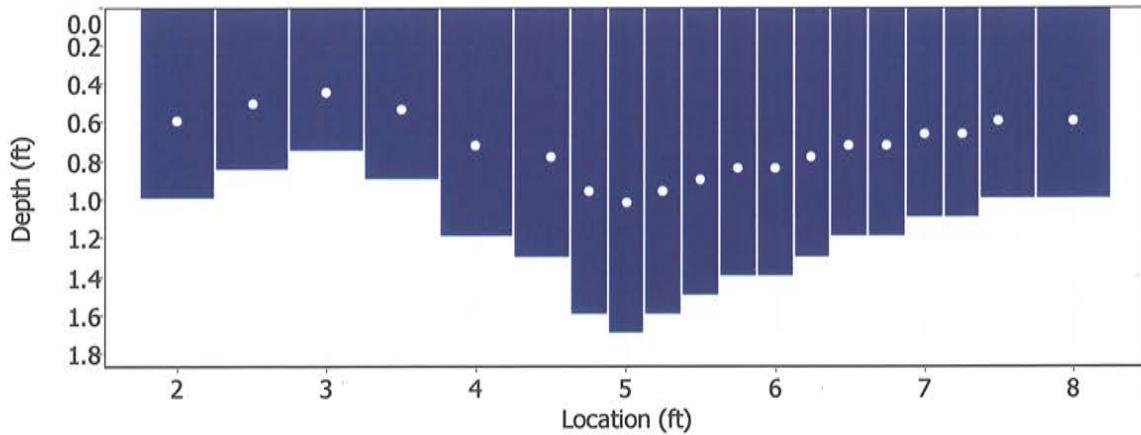
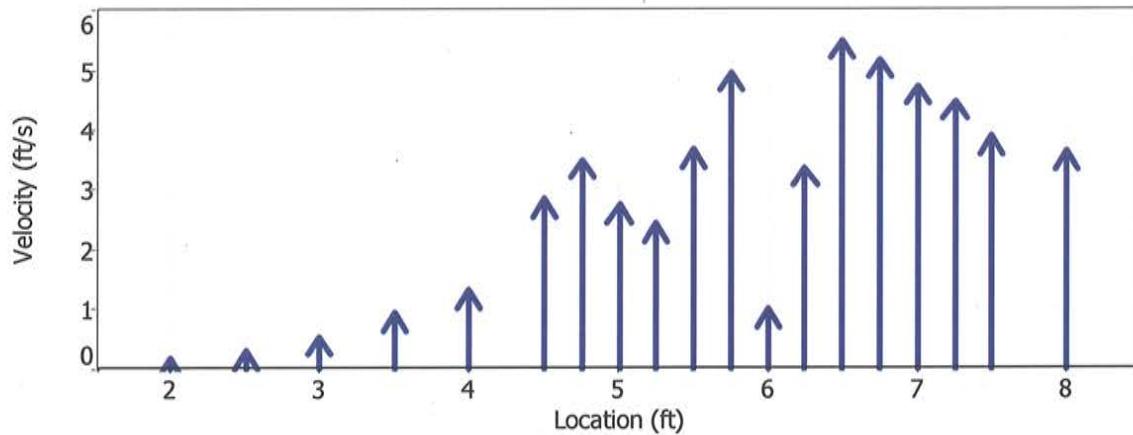
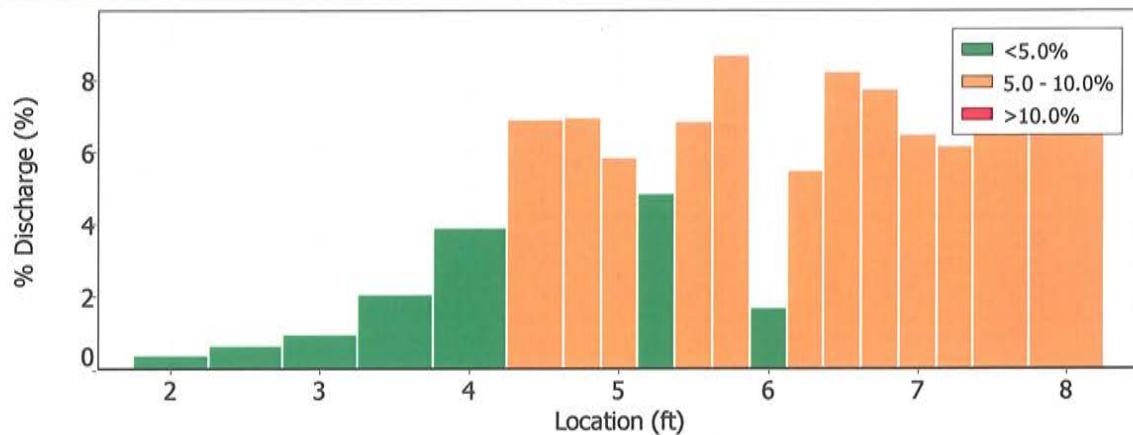
| File Information | | | | Site Details | | | | | | | | |
|----------------------|---|-----------------|----------------|-----------------------|------------|--------------|---------------|-----------------------|---------------|--------------|---------------|------------|
| File Name | CSC106.WAD | | | Site Name | CSC106 | | | | | | | |
| Start Date and Time | 2011/06/27 15:49:01 <th data-kind="ghost"></th> <th data-kind="ghost"></th> <th>Operator(s)</th> <td data-cs="3" data-kind="parent">RB</td> <td data-kind="ghost"></td> <td data-kind="ghost"></td> | | | Operator(s) | RB | | | | | | | |
| System Information | | | | Units (English Units) | | | | Discharge Uncertainty | | | | |
| Sensor Type | FlowTracker | Distance | ft | Accuracy | 1.0% | 1.0% | | Category | ISO | Stats | | |
| Serial # | P3514 | Velocity | ft/s | Depth | 0.1% | 1.3% | | | | | | |
| CPU Firmware Version | 3.7 | Area | ft^2 | Velocity | 1.4% | 7.8% | | | | | | |
| Software Ver | 2.20 | Discharge | cfs | Width | 0.1% | 0.1% | | | | | | |
| Summary | | | | | | | | | | | | |
| Averaging Int. | 40 | # Stations | 21 | | | | | | | | | |
| Start Edge | LEW | Total Width | 7.000 | | | | | | | | | |
| Mean SNR | 45.1 dB | Total Area | 7.488 | | | | | | | | | |
| Mean Temp | 44.45 °F | Mean Depth | 1.070 | | | | | | | | | |
| Disch. Equation | Mid-Section | Mean Velocity | 2.6866 | | | | | | | | | |
| | | Total Discharge | 20.1163 | | | | | | | | | |
| Measurement Results | | | | | | | | | | | | |
| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
| 0 | 15:49 | 1.50 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| <i>1</i> | <i>15:49</i> | <i>2.00</i> | <i>0.6</i> | <i>1.000</i> | <i>0.6</i> | <i>0.400</i> | <i>0.1608</i> | <i>1.00</i> | <i>0.1608</i> | <i>0.500</i> | <i>0.0804</i> | <i>0.4</i> |
| 2 | 15:50 | 2.50 | 0.6 | 0.850 | 0.6 | 0.340 | 0.2986 | 1.00 | 0.2986 | 0.425 | 0.1269 | 0.6 |
| 3 | 15:51 | 3.00 | 0.6 | 0.750 | 0.6 | 0.300 | 0.5305 | 1.00 | 0.5305 | 0.375 | 0.1989 | 1.0 |
| 4 | 15:52 | 3.50 | 0.6 | 0.900 | 0.6 | 0.360 | 0.9327 | 1.00 | 0.9327 | 0.450 | 0.4197 | 2.1 |
| 5 | 15:53 | 4.00 | 0.6 | 1.200 | 0.6 | 0.480 | 1.3150 | 1.00 | 1.3150 | 0.600 | 0.7891 | 3.9 |
| 6 | <i>15:54</i> | <i>4.50</i> | <i>0.6</i> | <i>1.300</i> | <i>0.6</i> | <i>0.520</i> | <i>2.8389</i> | <i>1.00</i> | <i>2.8389</i> | <i>0.487</i> | <i>1.3838</i> | <i>6.9</i> |
| 7 | <i>16:04</i> | <i>4.75</i> | <i>0.6</i> | <i>1.600</i> | <i>0.6</i> | <i>0.640</i> | <i>3.4934</i> | <i>1.00</i> | <i>3.4934</i> | <i>0.400</i> | <i>1.3974</i> | <i>6.9</i> |
| 8 | 15:55 | 5.00 | 0.6 | 1.700 | 0.6 | 0.680 | 2.7546 | 1.00 | 2.7546 | 0.425 | 1.1708 | 5.8 |
| 9 | <i>16:05</i> | <i>5.25</i> | <i>0.6</i> | <i>1.600</i> | <i>0.6</i> | <i>0.640</i> | <i>2.4226</i> | <i>1.00</i> | <i>2.4226</i> | <i>0.400</i> | <i>0.9691</i> | <i>4.8</i> |
| 10 | <i>15:56</i> | <i>5.50</i> | <i>0.6</i> | <i>1.500</i> | <i>0.6</i> | <i>0.600</i> | <i>3.6670</i> | <i>1.00</i> | <i>3.6670</i> | <i>0.375</i> | <i>1.3751</i> | <i>6.8</i> |
| 11 | 16:06 | 5.75 | 0.6 | 1.400 | 0.6 | 0.560 | 4.9633 | 1.00 | 4.9633 | 0.350 | 1.7371 | 8.6 |
| 12 | <i>15:57</i> | <i>6.00</i> | <i>0.6</i> | <i>1.400</i> | <i>0.6</i> | <i>0.560</i> | <i>0.9908</i> | <i>1.00</i> | <i>0.9908</i> | <i>0.350</i> | <i>0.3468</i> | <i>1.7</i> |
| 13 | <i>16:07</i> | <i>6.25</i> | <i>0.6</i> | <i>1.300</i> | <i>0.6</i> | <i>0.520</i> | <i>3.3760</i> | <i>1.00</i> | <i>3.3760</i> | <i>0.325</i> | <i>1.0971</i> | <i>5.5</i> |
| 14 | 15:58 | 6.50 | 0.6 | 1.200 | 0.6 | 0.480 | 5.5030 | 1.00 | 5.5030 | 0.300 | 1.6511 | 8.2 |
| 15 | 16:08 | 6.75 | 0.6 | 1.200 | 0.6 | 0.480 | 5.1913 | 1.00 | 5.1913 | 0.300 | 1.5576 | 7.7 |
| 16 | 15:59 | 7.00 | 0.6 | 1.100 | 0.6 | 0.440 | 4.7434 | 1.00 | 4.7434 | 0.275 | 1.3045 | 6.5 |
| 17 | 16:09 | 7.25 | 0.6 | 1.100 | 0.6 | 0.440 | 4.4780 | 1.00 | 4.4780 | 0.275 | 1.2315 | 6.1 |
| 18 | 16:01 | 7.50 | 0.6 | 1.000 | 0.6 | 0.400 | 3.8970 | 1.00 | 3.8970 | 0.375 | 1.4614 | 7.3 |
| 19 | 16:02 | 8.00 | 0.6 | 1.000 | 0.6 | 0.400 | 3.6362 | 1.00 | 3.6362 | 0.500 | 1.8181 | 9.0 |
| 20 | 16:02 | 8.50 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File InformationFile Name
Start Date and TimeCSC106.WAD
2011/06/27 15:49:01**Site Details**Site Name
Operator(s)CSC106
RB



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

| File Information | | Site Details | |
|---------------------|---------------------|--------------|--------|
| File Name | CSC106.WAD | Site Name | CSC106 |
| Start Date and Time | 2011/06/27 15:49:01 | Operator(s) | RB |

| Quality Control | | | |
|-----------------|------|------|----------------------------|
| St | Loc | %Dep | Message |
| 1 | 2.00 | 0.6 | High angle: 30 |
| 6 | 4.50 | 0.6 | High standard error: 0.176 |
| 7 | 4.75 | 0.6 | High standard error: 0.198 |
| 9 | 5.25 | 0.6 | High standard error: 0.193 |
| 10 | 5.50 | 0.6 | High standard error: 0.237 |
| 12 | 6.00 | 0.6 | High angle: 36 |
| | | 0.6 | High standard error: 0.310 |
| 13 | 6.25 | 0.6 | High standard error: 0.300 |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

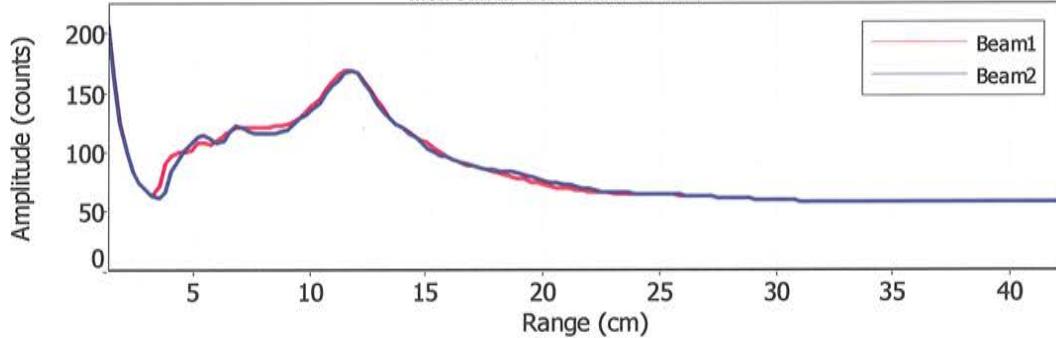
File Name CSC106.WAD
Start Date and Time 2011/06/27 15:49:01

Site Details

Site Name CSC106
Operator(s) RB

Automatic Quality Control Test (BeamCheck)

Mon Jun 27 15:47:13 MDT 2011



- ✓ Noise level check - Pass
- ✓ SNR check - Pass
- ✓ Peak location check - Pass
- ✓ Peak shape check - Pass



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

| File Information | | Site Details | | | | | | | | | | |
|------------------------------|---------------------|------------------------|-----------------|--------------|------------|--------------|---------------|-------------|---------------|--------------|---------------|------------|
| File Name | CSC106A.WAD | Site Name | CSC106A | | | | | | | | | |
| Start Date and Time | | | | | | | | | | | | |
| | 2011/06/29 08:59:56 | Operator(s) | RB | | | | | | | | | |
| System Information | | | | | | | | | | | | |
| Sensor Type | FlowTracker | Units | (English Units) | | | | | | | | | |
| Serial # | P3514 | Distance | ft | | | | | | | | | |
| CPU Firmware Version | 3.7 | Velocity | ft/s | | | | | | | | | |
| Software Ver | 2.20 | Area | ft^2 | | | | | | | | | |
| | | Discharge | cfs | | | | | | | | | |
| Summary | | | | | | | | | | | | |
| Averaging Int. | 40 | # Stations | 21 | | | | | | | | | |
| Start Edge | REW | Total Width | 11.454 | | | | | | | | | |
| Mean SNR | 41.3 dB | Total Area | 7.045 | | | | | | | | | |
| Mean Temp | 40.37 °F | Mean Depth | 0.615 | | | | | | | | | |
| Disch. Equation | Mid-Section | Mean Velocity | 3.3025 | | | | | | | | | |
| | | Total Discharge | 23.2673 | | | | | | | | | |
| Discharge Uncertainty | | | | | | | | | | | | |
| Category | ISO | Stats | | | | | | | | | | |
| Accuracy | 1.0% | 1.0% | | | | | | | | | | |
| Depth | 0.4% | 2.8% | | | | | | | | | | |
| Velocity | 0.8% | 4.0% | | | | | | | | | | |
| Width | 0.1% | 0.1% | | | | | | | | | | |
| Method | 2.0% | - | | | | | | | | | | |
| # Stations | 2.4% | - | | | | | | | | | | |
| Overall | 3.4% | 5.0% | | | | | | | | | | |
| Measurement Results | | | | | | | | | | | | |
| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
| 0 | 08:59 | 2.00 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| <i>1</i> | <i>08:59</i> | <i>2.70</i> | <i>0.6</i> | <i>0.300</i> | <i>0.6</i> | <i>0.120</i> | <i>0.6093</i> | <i>1.00</i> | <i>0.6093</i> | <i>0.210</i> | <i>0.1279</i> | <i>0.5</i> |
| 2 | 09:00 | 3.40 | 0.6 | 0.300 | 0.6 | 0.120 | 2.0325 | 1.00 | 2.0325 | 0.210 | 0.4267 | 1.8 |
| 3 | 09:03 | 4.10 | 0.6 | 0.400 | 0.6 | 0.160 | 3.2844 | 1.00 | 3.2844 | 0.280 | 0.9197 | 4.0 |
| 4 | 09:04 | 4.80 | 0.6 | 0.550 | 0.6 | 0.220 | 2.8189 | 1.00 | 2.8189 | 0.385 | 1.0852 | 4.7 |
| 5 | 09:05 | 5.50 | 0.6 | 0.600 | 0.6 | 0.240 | 4.9094 | 1.00 | 4.9094 | 0.420 | 2.0626 | 8.9 |
| 6 | 09:06 | 6.20 | 0.6 | 0.550 | 0.6 | 0.220 | 4.8205 | 1.00 | 4.8205 | 0.385 | 1.8558 | 8.0 |
| 7 | 09:07 | 6.90 | 0.6 | 0.600 | 0.6 | 0.240 | 4.3045 | 1.00 | 4.3045 | 0.420 | 1.8084 | 7.8 |
| 8 | 09:08 | 7.60 | 0.6 | 0.700 | 0.6 | 0.280 | 4.2858 | 1.00 | 4.2858 | 0.490 | 2.1008 | 9.0 |
| 9 | 09:10 | 8.30 | 0.6 | 0.900 | 0.6 | 0.360 | 3.2923 | 1.00 | 3.2923 | 0.630 | 2.0744 | 8.9 |
| 10 | 09:11 | 9.00 | 0.6 | 0.700 | 0.6 | 0.280 | 3.7333 | 1.00 | 3.7333 | 0.367 | 1.3708 | 5.9 |
| 11 | 09:18 | 9.35 | 0.6 | 0.800 | 0.6 | 0.320 | 3.2087 | 1.00 | 3.2087 | 0.280 | 0.8984 | 3.9 |
| 12 | 09:12 | 9.70 | 0.6 | 0.900 | 0.6 | 0.360 | 4.1759 | 1.00 | 4.1759 | 0.315 | 1.3149 | 5.7 |
| 13 | 09:19 | 10.05 | 0.6 | 0.900 | 0.6 | 0.360 | 4.5171 | 1.00 | 4.5171 | 0.315 | 1.4230 | 6.1 |
| <i>14</i> | <i>09:12</i> | <i>10.40</i> | <i>0.6</i> | <i>0.900</i> | <i>0.6</i> | <i>0.360</i> | <i>3.1286</i> | <i>1.00</i> | <i>3.1286</i> | <i>0.473</i> | <i>1.4807</i> | <i>6.4</i> |
| 15 | 09:14 | 11.10 | 0.6 | 1.000 | 0.6 | 0.400 | 3.2861 | 1.00 | 3.2861 | 0.700 | 2.3007 | 9.9 |
| 16 | 09:15 | 11.80 | 0.6 | 0.700 | 0.6 | 0.280 | 2.4701 | 1.00 | 2.4701 | 0.490 | 1.2108 | 5.2 |
| 17 | 09:16 | 12.50 | 0.6 | 0.650 | 0.6 | 0.260 | 1.3294 | 1.00 | 1.3294 | 0.373 | 0.4961 | 2.1 |
| 18 | 09:21 | 12.95 | 0.6 | 0.500 | 0.6 | 0.200 | 1.1335 | 1.00 | 1.1335 | 0.175 | 0.1984 | 0.9 |
| 19 | 09:17 | 13.20 | 0.6 | 0.500 | 0.6 | 0.200 | 0.8875 | 1.00 | 0.8875 | 0.126 | 0.1118 | 0.5 |
| 20 | 09:17 | 13.45 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |

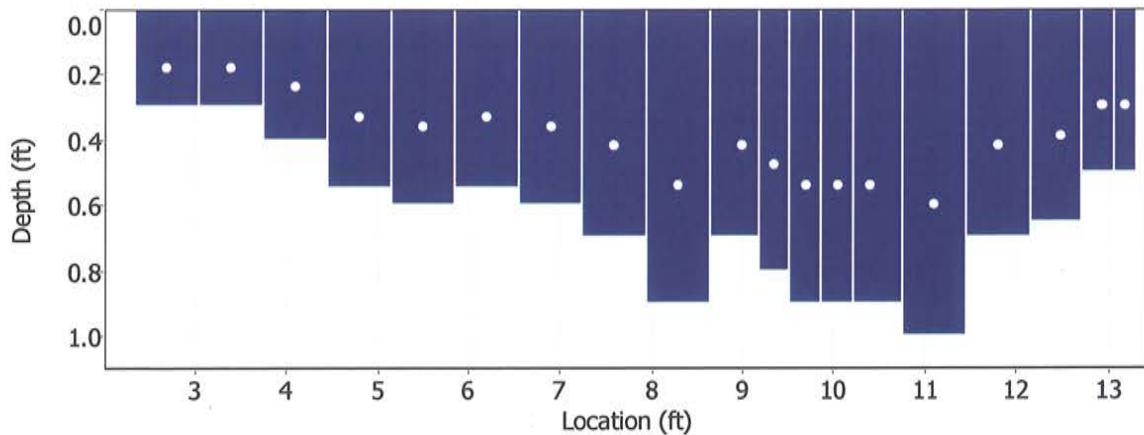
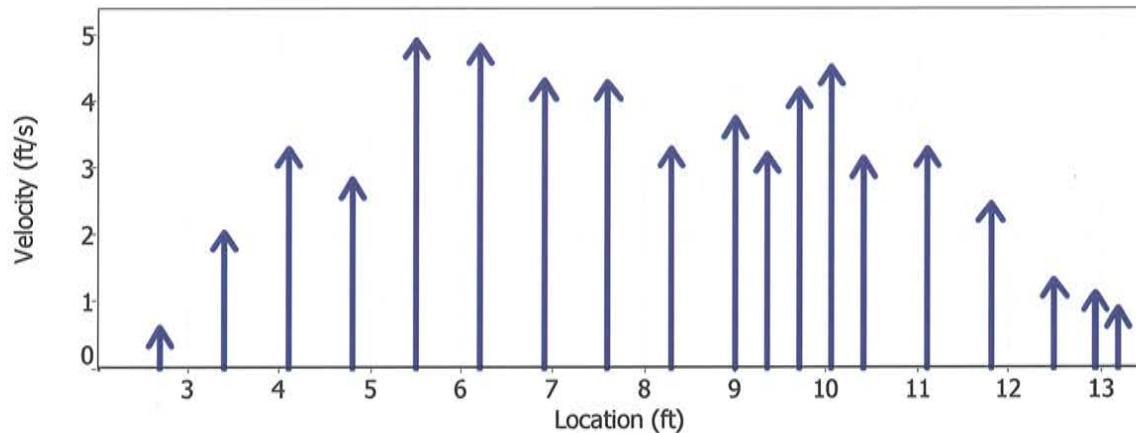
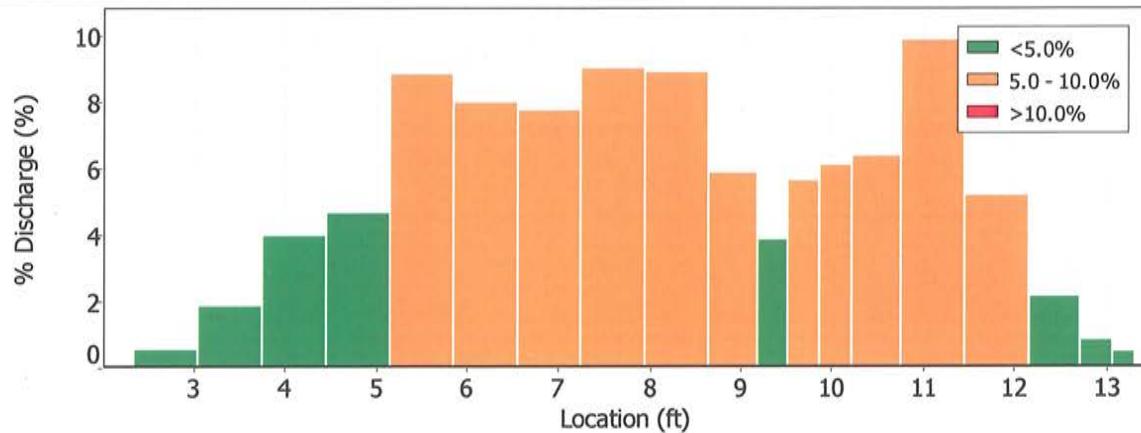
Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

| File Information | | Site Details | |
|---------------------|---------------------|--------------|---------|
| File Name | CSC106A.WAD | Site Name | CSC106A |
| Start Date and Time | 2011/06/29 08:59:56 | Operator(s) | RB |





Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

File Name CSC106A.WAD
Start Date and Time 2011/06/29 08:59:56

Site Details

Site Name CSC106A
Operator(s) RB

Quality Control

| St | Loc | %Dep | Message |
|----|-------|------|----------------------------|
| 1 | 2.70 | 0.6 | High angle: 29 |
| 14 | 10.40 | 0.6 | High standard error: 0.196 |
| 19 | 13.20 | 0.6 | High angle: 21 |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

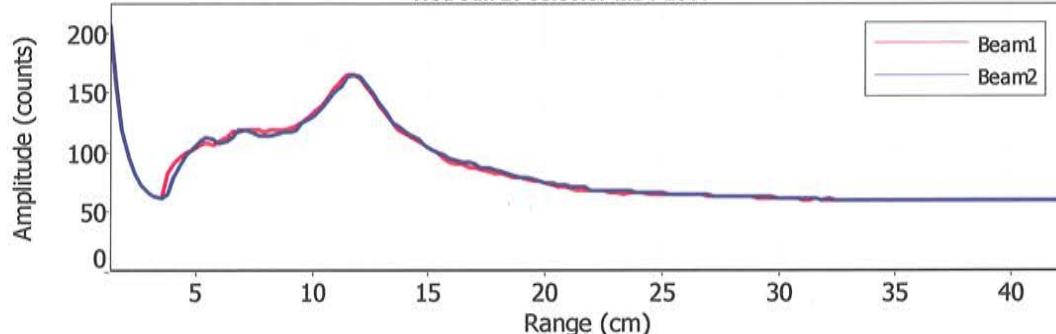
File Name CSC106A.WAD
Start Date and Time 2011/06/29 08:59:56

Site Details

Site Name CSC106A
Operator(s) RB

Automatic Quality Control Test (BeamCheck)

Wed Jun 29 08:58:37 MDT 2011



- Noise level check - Pass
- SNR check - Pass
- Peak location check - Pass
- Peak shape check - Pass



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

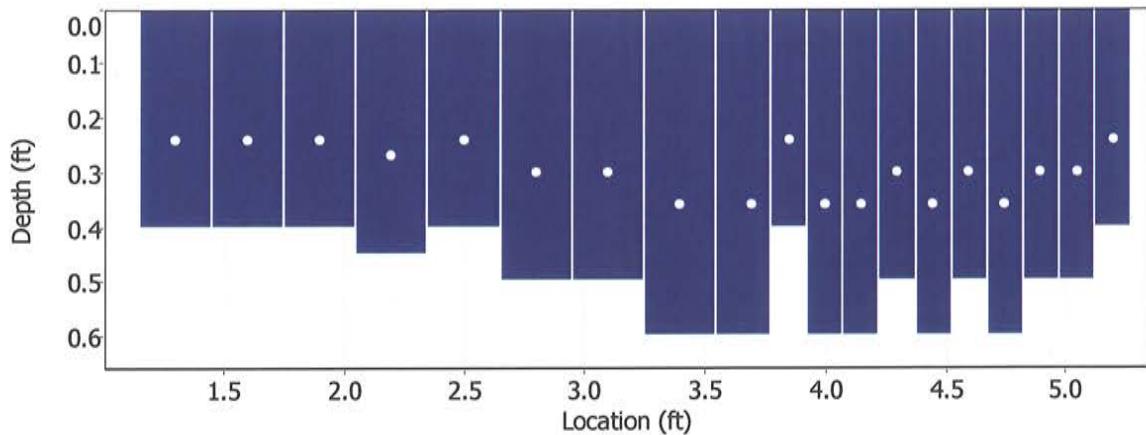
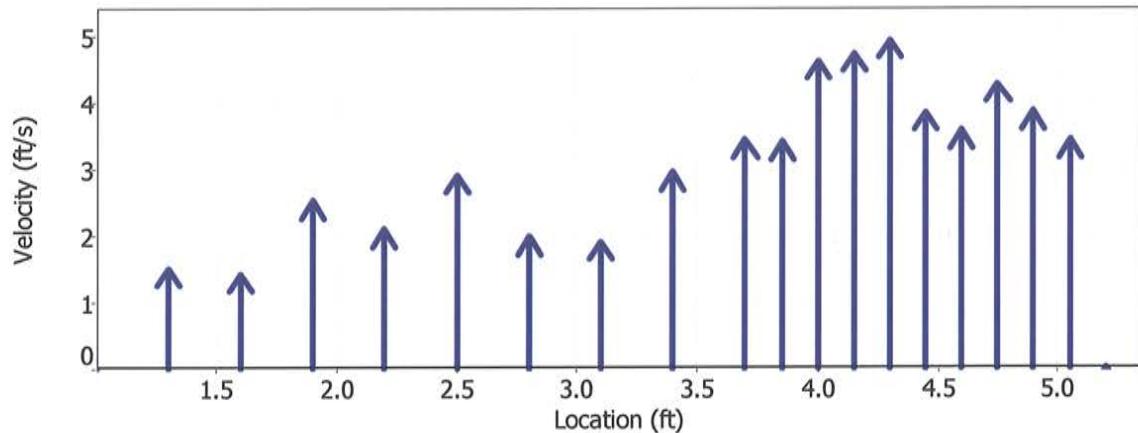
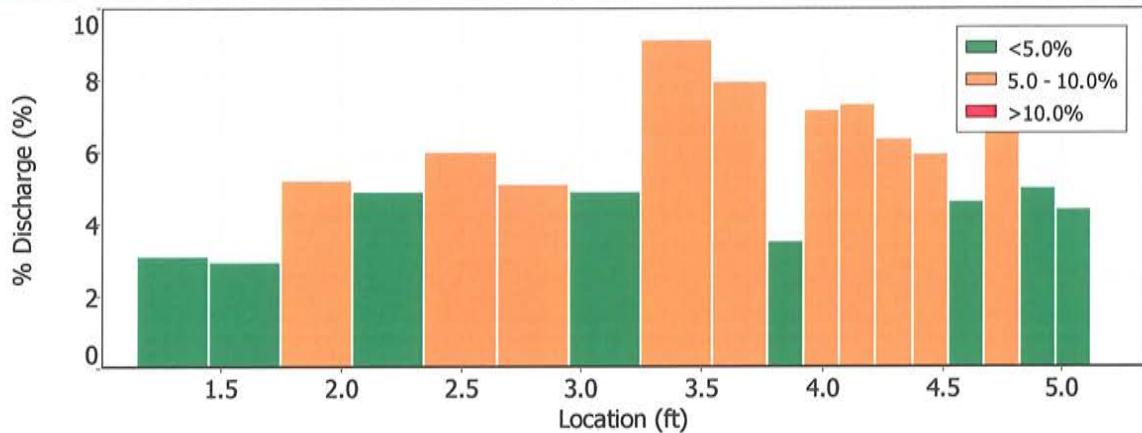
| File Information | | Site Details | | | | | | | | | | |
|------------------------------|---------------------|------------------------|-----------------|-------|------|--------|--------|----------|--------|-------|--------|-----|
| File Name | CSC108.WAD | Site Name | CSC108 | | | | | | | | | |
| Start Date and Time | | | | | | | | | | | | |
| Start Date and Time | 2011/06/29 10:41:34 | Operator(s) | RB | | | | | | | | | |
| System Information | | | | | | | | | | | | |
| Sensor Type | FlowTracker | Units | (English Units) | | | | | | | | | |
| Serial # | P3514 | Distance | ft | | | | | | | | | |
| CPU Firmware Version | 3.7 | Velocity | ft/s | | | | | | | | | |
| Software Ver | 2.20 | Area | ft^2 | | | | | | | | | |
| | | Discharge | cfs | | | | | | | | | |
| Summary | | | | | | | | | | | | |
| Averaging Int. | 40 | # Stations | 21 | | | | | | | | | |
| Start Edge | REW | Total Width | 4.346 | | | | | | | | | |
| Mean SNR | 45.2 dB | Total Area | 2.009 | | | | | | | | | |
| Mean Temp | 41.78 °F | Mean Depth | 0.462 | | | | | | | | | |
| Disch. Equation | Mid-Section | Mean Velocity | 2.9090 | | | | | | | | | |
| | | Total Discharge | 5.8440 | | | | | | | | | |
| Discharge Uncertainty | | | | | | | | | | | | |
| Category | ISO | Stats | | | | | | | | | | |
| Accuracy | 1.0% | 1.0% | | | | | | | | | | |
| Depth | 0.4% | 3.4% | | | | | | | | | | |
| Velocity | 1.1% | 4.3% | | | | | | | | | | |
| Width | 0.1% | 0.1% | | | | | | | | | | |
| Method | 1.8% | - | | | | | | | | | | |
| # Stations | 2.4% | - | | | | | | | | | | |
| Overall | 3.4% | 5.6% | | | | | | | | | | |
| Measurement Results | | | | | | | | | | | | |
| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
| 0 | 10:41 | 1.00 | None | 0.000 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.000 | 0.0000 | 0.0 |
| 1 | 10:41 | 1.30 | 0.6 | 0.400 | 0.6 | 0.160 | 1.5098 | 1.00 | 1.5098 | 0.120 | 0.1811 | 3.1 |
| 2 | 10:42 | 1.60 | 0.6 | 0.400 | 0.6 | 0.160 | 1.4311 | 1.00 | 1.4311 | 0.120 | 0.1716 | 2.9 |
| 3 | 10:43 | 1.90 | 0.6 | 0.400 | 0.6 | 0.160 | 2.5279 | 1.00 | 2.5279 | 0.120 | 0.3032 | 5.2 |
| 4 | 10:44 | 2.20 | 0.6 | 0.450 | 0.6 | 0.180 | 2.1060 | 1.00 | 2.1060 | 0.135 | 0.2843 | 4.9 |
| 5 | 10:45 | 2.50 | 0.6 | 0.400 | 0.6 | 0.160 | 2.9108 | 1.00 | 2.9108 | 0.120 | 0.3491 | 6.0 |
| 6 | 10:47 | 2.80 | 0.6 | 0.500 | 0.6 | 0.200 | 1.9905 | 1.00 | 1.9905 | 0.150 | 0.2984 | 5.1 |
| 7 | 10:48 | 3.10 | 0.6 | 0.500 | 0.6 | 0.200 | 1.9062 | 1.00 | 1.9062 | 0.150 | 0.2858 | 4.9 |
| 8 | 10:49 | 3.40 | 0.6 | 0.600 | 0.6 | 0.240 | 2.9610 | 1.00 | 2.9610 | 0.180 | 0.5328 | 9.1 |
| 9 | 10:50 | 3.70 | 0.6 | 0.600 | 0.6 | 0.240 | 3.4393 | 1.00 | 3.4393 | 0.135 | 0.4655 | 8.0 |
| 10 | 10:57 | 3.85 | 0.6 | 0.400 | 0.6 | 0.160 | 3.4140 | 1.00 | 3.4140 | 0.060 | 0.2047 | 3.5 |
| 11 | 10:51 | 4.00 | 0.6 | 0.600 | 0.6 | 0.240 | 4.6401 | 1.00 | 4.6401 | 0.090 | 0.4175 | 7.1 |
| 12 | 10:58 | 4.15 | 0.6 | 0.600 | 0.6 | 0.240 | 4.7474 | 1.00 | 4.7474 | 0.090 | 0.4271 | 7.3 |
| 13 | 10:52 | 4.30 | 0.6 | 0.500 | 0.6 | 0.200 | 4.9505 | 1.00 | 4.9505 | 0.075 | 0.3715 | 6.4 |
| 14 | 10:59 | 4.45 | 0.6 | 0.600 | 0.6 | 0.240 | 3.8681 | 1.00 | 3.8681 | 0.090 | 0.3480 | 6.0 |
| 15 | 10:53 | 4.60 | 0.6 | 0.500 | 0.6 | 0.200 | 3.5896 | 1.00 | 3.5896 | 0.075 | 0.2691 | 4.6 |
| 16 | 11:01 | 4.75 | 0.6 | 0.600 | 0.6 | 0.240 | 4.2907 | 1.00 | 4.2907 | 0.090 | 0.3860 | 6.6 |
| 17 | 10:54 | 4.90 | 0.6 | 0.500 | 0.6 | 0.200 | 3.8720 | 1.00 | 3.8720 | 0.075 | 0.2903 | 5.0 |
| 18 | 11:03 | 5.05 | 0.6 | 0.500 | 0.6 | 0.200 | 3.4393 | 1.00 | 3.4393 | 0.075 | 0.2578 | 4.4 |
| 19 | 10:55 | 5.20 | 0.6 | 0.400 | 0.6 | 0.160 | 0.0020 | 1.00 | 0.0020 | 0.059 | 0.0001 | 0.0 |
| 20 | 10:55 | 5.35 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File InformationFile Name
Start Date and TimeCSC108.WAD
2011/06/29 10:41:34**Site Details**Site Name
Operator(s)CSC108
RB



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

File Name CSC108.WAD
Start Date and Time 2011/06/29 10:41:34

Site Details

Site Name CSC108
Operator(s) RB

Quality Control

| St | Loc | %Dep | Message |
|----|------|------|---|
| 8 | 3.40 | 0.6 | High angle: -27 |
| | | 0.6 | High standard error: 0.204 |
| 9 | 3.70 | 0.6 | High angle: -21 |
| 10 | 3.85 | 0.6 | High angle: -21 |
| 15 | 4.60 | 0.6 | High angle: -20 |
| 18 | 5.05 | 0.6 | High angle: -22 |
| 19 | 5.20 | 0.6 | SNR (57.8) is different from typical SNR (45.2) |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

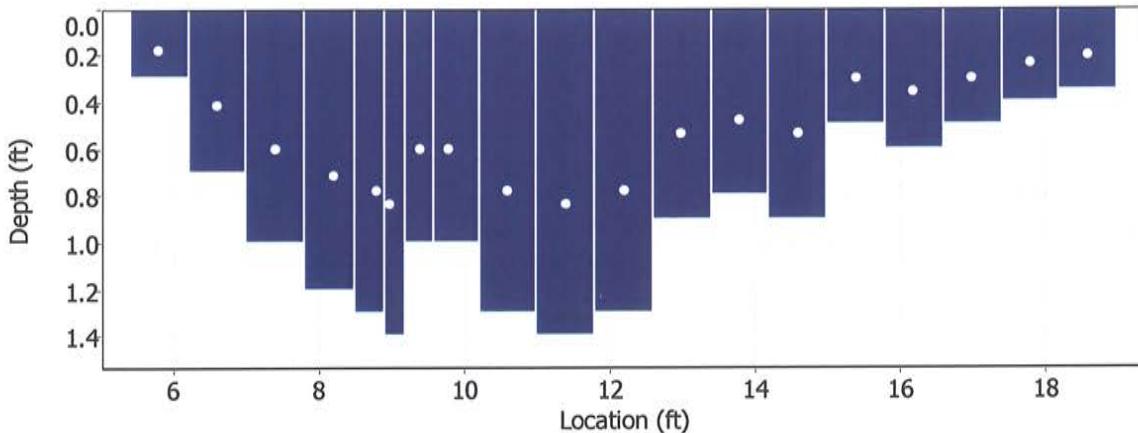
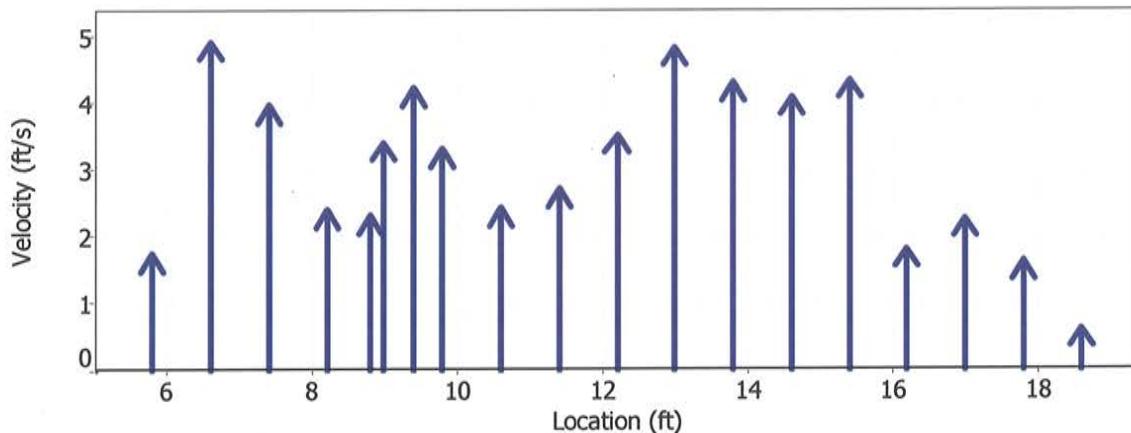
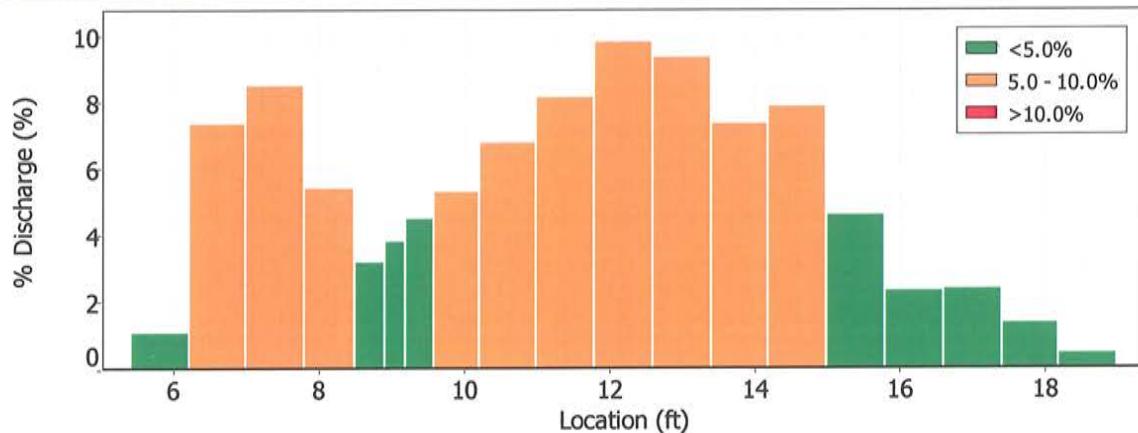
| File Information | | Site Details | | | | | | | | | | |
|------------------------------|---------------------|------------------------|-----------------|-------|------|-------|--------|----------|--------|-------|--------|-----|
| File Name | CSC11A.WAD | Site Name | CSC11A | | | | | | | | | |
| Start Date and Time | | | | | | | | | | | | |
| | 2011/06/27 17:03:01 | Operator(s) | RB | | | | | | | | | |
| System Information | | | | | | | | | | | | |
| Sensor Type | FlowTracker | Units | (English Units) | | | | | | | | | |
| Serial # | P3514 | Distance | ft | | | | | | | | | |
| CPU Firmware Version | 3.7 | Velocity | ft/s | | | | | | | | | |
| Software Ver | 2.20 | Area | ft^2 | | | | | | | | | |
| | | Discharge | cfs | | | | | | | | | |
| Summary | | | | | | | | | | | | |
| Averaging Int. | 40 | # Stations | 21 | | | | | | | | | |
| Start Edge | REW | Total Width | 14.398 | | | | | | | | | |
| Mean SNR | 44.7 dB | Total Area | 11.538 | | | | | | | | | |
| Mean Temp | 46.37 °F | Mean Depth | 0.801 | | | | | | | | | |
| Disch. Equation | Mid-Section | Mean Velocity | 3.2357 | | | | | | | | | |
| | | Total Discharge | 37.3328 | | | | | | | | | |
| Discharge Uncertainty | | | | | | | | | | | | |
| Category | ISO | Stats | | | | | | | | | | |
| Accuracy | 1.0% | 1.0% | | | | | | | | | | |
| Depth | 0.3% | 3.1% | | | | | | | | | | |
| Velocity | 1.2% | 5.4% | | | | | | | | | | |
| Width | 0.1% | 0.1% | | | | | | | | | | |
| Method | 2.0% | - | | | | | | | | | | |
| # Stations | 2.4% | - | | | | | | | | | | |
| Overall | 3.5% | 6.3% | | | | | | | | | | |
| Measurement Results | | | | | | | | | | | | |
| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
| 0 | 17:03 | 5.00 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| 1 | 17:03 | 5.80 | 0.6 | 0.300 | 0.6 | 0.120 | 1.7467 | 1.00 | 1.7467 | 0.240 | 0.4190 | 1.1 |
| 2 | 17:04 | 6.60 | 0.6 | 0.700 | 0.6 | 0.280 | 4.9229 | 1.00 | 4.9229 | 0.560 | 2.7569 | 7.4 |
| 3 | 17:05 | 7.40 | 0.6 | 1.000 | 0.6 | 0.400 | 3.9731 | 1.00 | 3.9731 | 0.800 | 3.1780 | 8.5 |
| 4 | 17:06 | 8.20 | 0.6 | 1.200 | 0.6 | 0.480 | 2.4026 | 1.00 | 2.4026 | 0.840 | 2.0187 | 5.4 |
| 5 | 17:26 | 8.80 | 0.6 | 1.300 | 0.6 | 0.520 | 2.3104 | 1.00 | 2.3104 | 0.520 | 1.2011 | 3.2 |
| 6 | 17:07 | 9.00 | 0.6 | 1.400 | 0.6 | 0.560 | 3.4062 | 1.00 | 3.4062 | 0.420 | 1.4307 | 3.8 |
| 7 | 17:24 | 9.40 | 0.6 | 1.000 | 0.6 | 0.400 | 4.2287 | 1.00 | 4.2287 | 0.400 | 1.6912 | 4.5 |
| 8 | 17:08 | 9.80 | 0.6 | 1.000 | 0.6 | 0.400 | 3.3140 | 1.00 | 3.3140 | 0.600 | 1.9870 | 5.3 |
| 9 | 17:10 | 10.60 | 0.6 | 1.300 | 0.6 | 0.520 | 2.4334 | 1.00 | 2.4334 | 1.040 | 2.5301 | 6.8 |
| 10 | 17:12 | 11.40 | 0.6 | 1.400 | 0.6 | 0.560 | 2.7123 | 1.00 | 2.7123 | 1.120 | 3.0371 | 8.1 |
| 11 | 17:13 | 12.20 | 0.6 | 1.300 | 0.6 | 0.520 | 3.5282 | 1.00 | 3.5282 | 1.040 | 3.6684 | 9.8 |
| 12 | 17:15 | 13.00 | 0.6 | 0.900 | 0.6 | 0.360 | 4.8392 | 1.00 | 4.8392 | 0.720 | 3.4834 | 9.3 |
| 13 | 17:16 | 13.80 | 0.6 | 0.800 | 0.6 | 0.320 | 4.3140 | 1.00 | 4.3140 | 0.640 | 2.7600 | 7.4 |
| 14 | 17:17 | 14.60 | 0.6 | 0.900 | 0.6 | 0.360 | 4.0994 | 1.00 | 4.0994 | 0.720 | 2.9509 | 7.9 |
| 15 | 17:18 | 15.40 | 0.6 | 0.500 | 0.6 | 0.200 | 4.3494 | 1.00 | 4.3494 | 0.400 | 1.7395 | 4.7 |
| 16 | 17:19 | 16.20 | 0.6 | 0.600 | 0.6 | 0.240 | 1.8222 | 1.00 | 1.8222 | 0.480 | 0.8746 | 2.3 |
| 17 | 17:20 | 17.00 | 0.6 | 0.500 | 0.6 | 0.200 | 2.2769 | 1.00 | 2.2769 | 0.400 | 0.9106 | 2.4 |
| 18 | 17:21 | 17.80 | 0.6 | 0.400 | 0.6 | 0.160 | 1.6378 | 1.00 | 1.6378 | 0.320 | 0.5239 | 1.4 |
| 19 | 17:22 | 18.60 | 0.6 | 0.350 | 0.6 | 0.140 | 0.6138 | 1.00 | 0.6138 | 0.280 | 0.1719 | 0.5 |
| 20 | 17:22 | 19.40 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File InformationFile Name
Start Date and TimeCSC111A.WAD
2011/06/27 17:03:01**Site Details**Site Name
Operator(s)CSC111A
RB



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

File Name CSC111A.WAD
Start Date and Time 2011/06/27 17:03:01

Site Details

Site Name CSC111A
Operator(s) RB

Quality Control

| St | Loc | %Dep | Message |
|----|-------|------|--|
| 3 | 7.40 | 0.6 | High standard error: 0.224 |
| 4 | 8.20 | 0.6 | High standard error: 0.193 |
| 5 | 8.80 | 0.6 | High standard error: 0.170 |
| 8 | 9.80 | 0.6 | High standard error: 0.170 |
| 9 | 10.60 | 0.6 | High standard error: 0.197 |
| 10 | 11.40 | 0.6 | High angle: -22 |
| 12 | 13.00 | 0.6 | High SNR variation during measurement: 1,7,9,9 |
| 16 | 16.20 | 0.6 | High angle: 20 |
| 17 | 17.00 | 0.6 | High angle: 22 |
| 19 | 18.60 | 0.6 | High angle: -21 |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

File Name CSC112.WAD
 Start Date and Time 2011/06/28 08:59:37

Site Details

Site Name CSC112
 Operator(s) RB

System Information

Sensor Type FlowTracker
 Serial # P3514
 CPU Firmware Version 3.7
 Software Ver 2.20

Units (English Units)
 Distance ft
 Velocity ft/s
 Area ft²
 Discharge cfs

Discharge Uncertainty

| Category | ISO | Stats |
|----------------|-------------|-------------|
| Accuracy | 1.0% | 1.0% |
| Depth | 0.2% | 2.6% |
| Velocity | 0.9% | 2.5% |
| Width | 0.1% | 0.1% |
| Method | 1.9% | - |
| # Stations | 2.3% | - |
| Overall | 3.2% | 3.8% |

Summary

| | | | |
|-----------------|-------------|------------------------|----------------|
| Averaging Int. | 40 | # Stations | 22 |
| Start Edge | LEW | Total Width | 16.199 |
| Mean SNR | 42.5 dB | Total Area | 13.129 |
| Mean Temp | 40.84 °F | Mean Depth | 0.810 |
| Disch. Equation | Mid-Section | Mean Velocity | 2.9433 |
| | | Total Discharge | 38.6421 |

Measurement Results

| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
|----|--------------|--------------|------------|--------------|------------|--------------|---------------|-------------|---------------|--------------|---------------|------------|
| 0 | 08:59 | 2.00 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| 1 | <i>08:59</i> | <i>2.90</i> | <i>0.6</i> | <i>0.300</i> | <i>0.6</i> | <i>0.120</i> | <i>0.0696</i> | <i>1.00</i> | <i>0.0696</i> | <i>0.270</i> | <i>0.0188</i> | <i>0.0</i> |
| 2 | 09:00 | 3.80 | 0.6 | 0.900 | 0.6 | 0.360 | 2.1060 | 1.00 | 2.1060 | 0.810 | 1.7056 | 4.4 |
| 3 | 09:01 | 4.70 | 0.6 | 0.700 | 0.6 | 0.280 | 2.5413 | 1.00 | 2.5413 | 0.630 | 1.6012 | 4.1 |
| 4 | 09:03 | 5.60 | 0.6 | 1.000 | 0.6 | 0.400 | 2.4970 | 1.00 | 2.4970 | 0.900 | 2.2472 | 5.8 |
| 5 | 09:04 | 6.50 | 0.6 | 1.000 | 0.6 | 0.400 | 3.1749 | 1.00 | 3.1749 | 0.900 | 2.8572 | 7.4 |
| 6 | 09:05 | 7.40 | 0.6 | 1.000 | 0.6 | 0.400 | 3.6155 | 1.00 | 3.6155 | 0.900 | 3.2537 | 8.4 |
| 7 | 09:06 | 8.30 | 0.6 | 1.000 | 0.6 | 0.400 | 3.8009 | 1.00 | 3.8009 | 0.700 | 2.6611 | 6.9 |
| 8 | 09:21 | 8.80 | 0.6 | 1.100 | 0.6 | 0.440 | 3.9459 | 1.00 | 3.9459 | 0.495 | 1.9532 | 5.1 |
| 9 | 09:07 | 9.20 | 0.6 | 1.300 | 0.6 | 0.520 | 3.9052 | 1.00 | 3.9052 | 0.520 | 2.0310 | 5.3 |
| 10 | 09:20 | 9.60 | 0.6 | 1.300 | 0.6 | 0.520 | 3.6919 | 1.00 | 3.6919 | 0.585 | 2.1594 | 5.6 |
| 11 | 09:08 | 10.10 | 0.6 | 1.300 | 0.6 | 0.520 | 2.7703 | 1.00 | 2.7703 | 0.909 | 2.5195 | 6.5 |
| 12 | 09:09 | 11.00 | 0.6 | 1.100 | 0.6 | 0.440 | 3.1529 | 1.00 | 3.1529 | 0.990 | 3.1213 | 8.1 |
| 13 | 09:10 | 11.90 | 0.6 | 0.900 | 0.6 | 0.360 | 3.7897 | 1.00 | 3.7897 | 0.630 | 2.3883 | 6.2 |
| 14 | 09:18 | 12.40 | 0.6 | 1.000 | 0.6 | 0.400 | 4.1962 | 1.00 | 4.1962 | 0.450 | 1.8881 | 4.9 |
| 15 | 09:12 | 12.80 | 0.6 | 1.000 | 0.6 | 0.400 | 4.4892 | 1.00 | 4.4892 | 0.650 | 2.9162 | 7.5 |
| 16 | 09:13 | 13.70 | 0.6 | 0.800 | 0.6 | 0.320 | 3.0591 | 1.00 | 3.0591 | 0.720 | 2.2020 | 5.7 |
| 17 | <i>09:14</i> | <i>14.60</i> | <i>0.6</i> | <i>0.700</i> | <i>0.6</i> | <i>0.280</i> | <i>2.6667</i> | <i>1.00</i> | <i>2.6667</i> | <i>0.630</i> | <i>1.6802</i> | <i>4.3</i> |
| 18 | <i>09:15</i> | <i>15.50</i> | <i>0.6</i> | <i>0.600</i> | <i>0.6</i> | <i>0.240</i> | <i>1.4767</i> | <i>1.00</i> | <i>1.4767</i> | <i>0.540</i> | <i>0.7975</i> | <i>2.1</i> |
| 19 | 09:16 | 16.40 | 0.6 | 0.500 | 0.6 | 0.200 | 0.5525 | 1.00 | 0.5525 | 0.450 | 0.2486 | 0.6 |
| 20 | 09:17 | 17.30 | 0.6 | 0.500 | 0.6 | 0.200 | 0.8714 | 1.00 | 0.8714 | 0.450 | 0.3921 | 1.0 |
| 21 | 09:17 | 18.20 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |

Rows in Italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

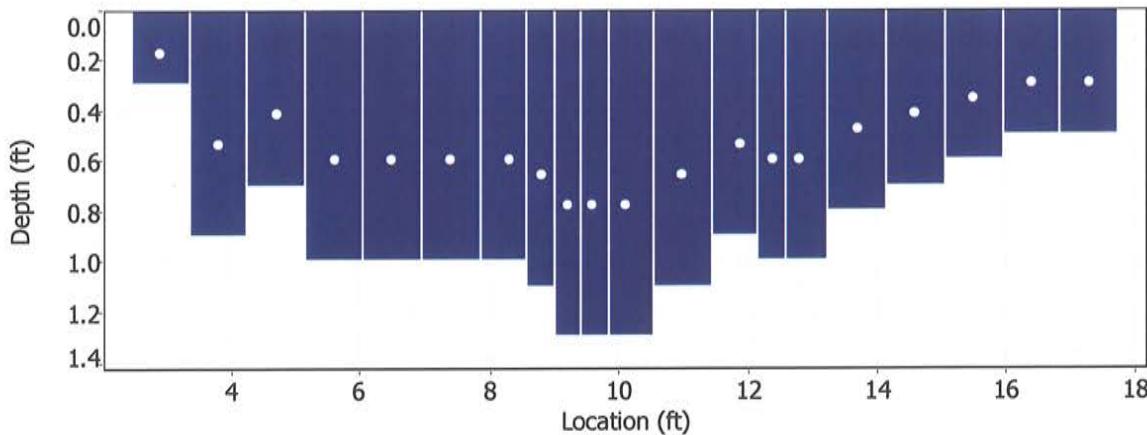
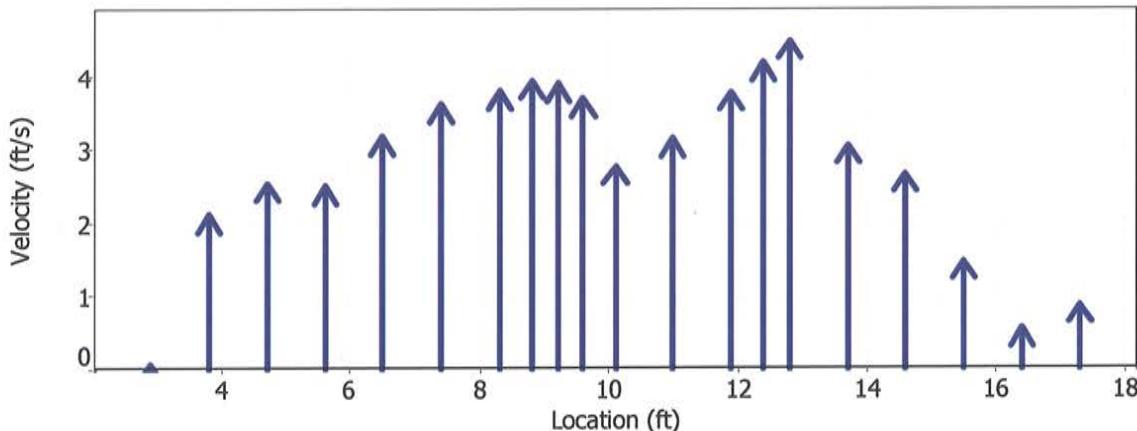
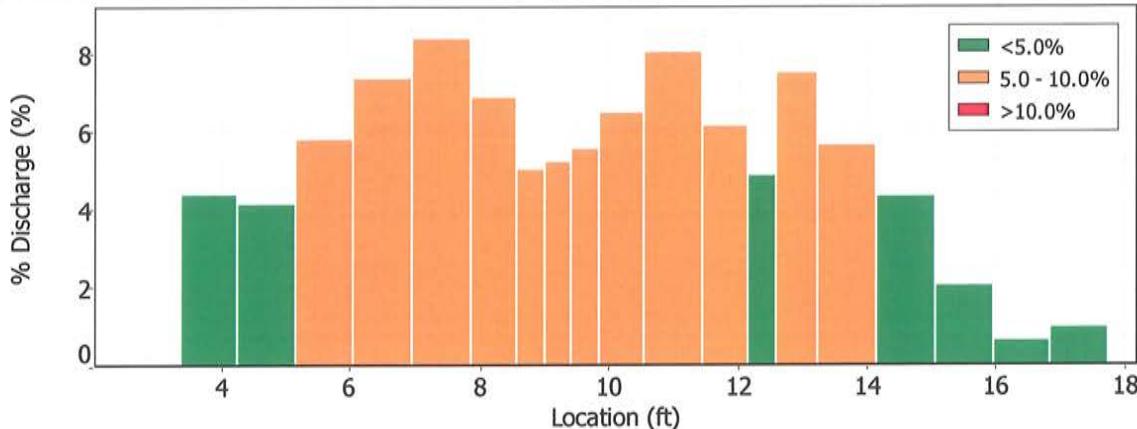
File Name
Start Date and Time

CSC112.WAD
2011/06/28 08:59:37

Site Details

Site Name
Operator(s)

CSC112
RB





Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

File Name CSC112.WAD
Start Date and Time 2011/06/28 08:59:37

Site Details

Site Name CSC112
Operator(s) RB

Quality Control

| St | Loc | %Dep | Message |
|----|-------|------|--|
| 1 | 2.90 | 0.6 | High SNR variation during measurement: 1,7,5,6 |
| 17 | 14.60 | 0.6 | High angle: -24 |
| 18 | 15.50 | 0.6 | High angle: -25 |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

File Name
Start Date and Time

CSC112.WAD
2011/06/28 08:59:37

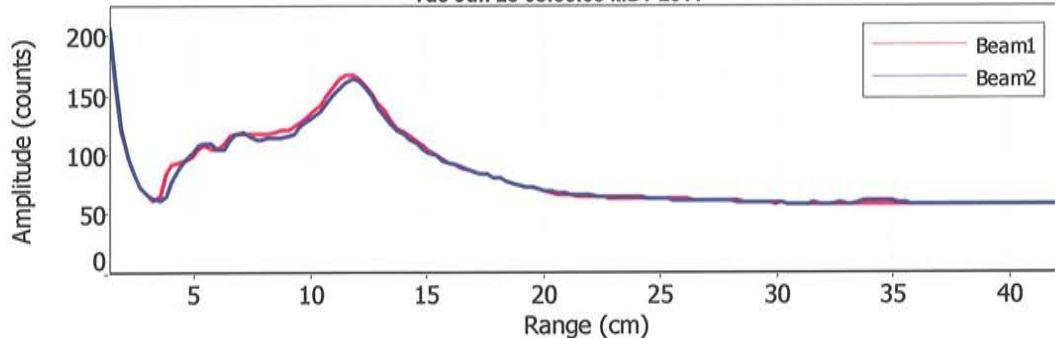
Site Details

Site Name
Operator(s)

CSC112
RB

Automatic Quality Control Test (BeamCheck)

Tue Jun 28 08:58:08 MDT 2011



- Noise level check - Pass
- SNR check - Pass
- Peak location check - Pass
- Peak shape check - Pass



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

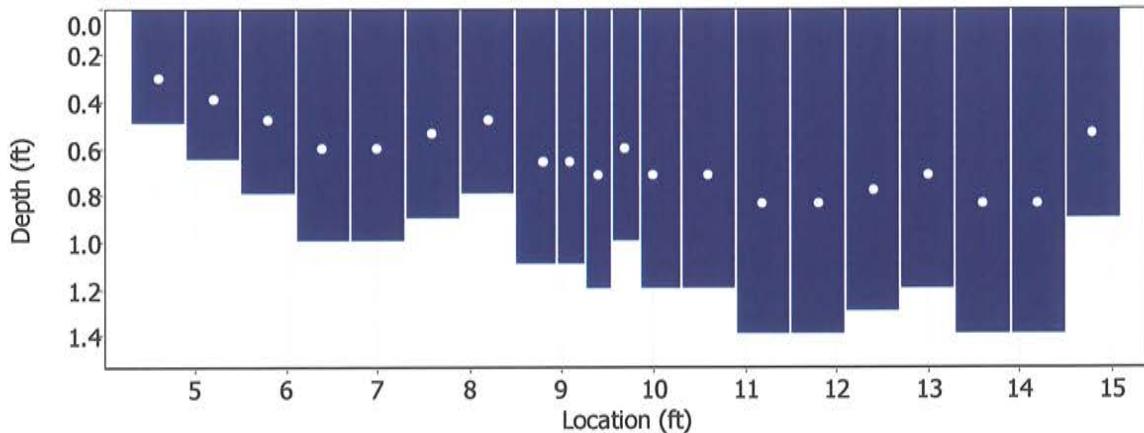
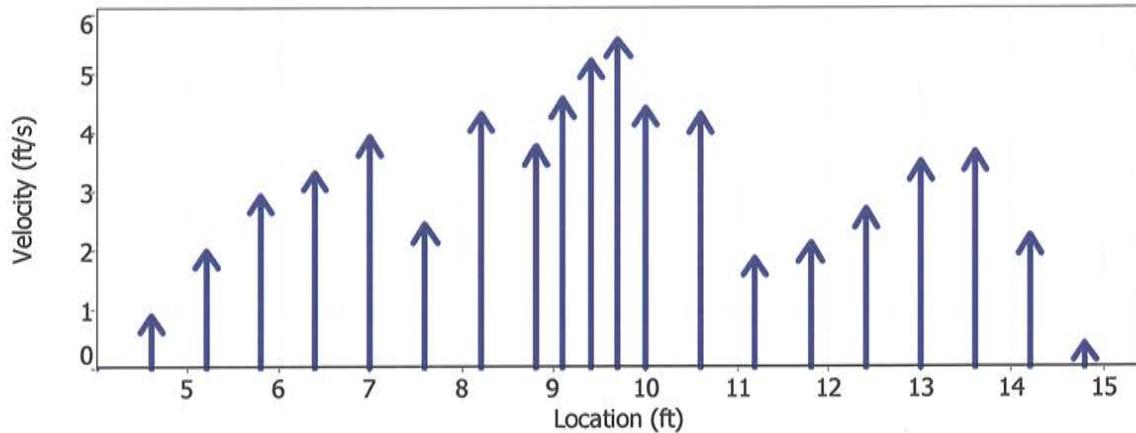
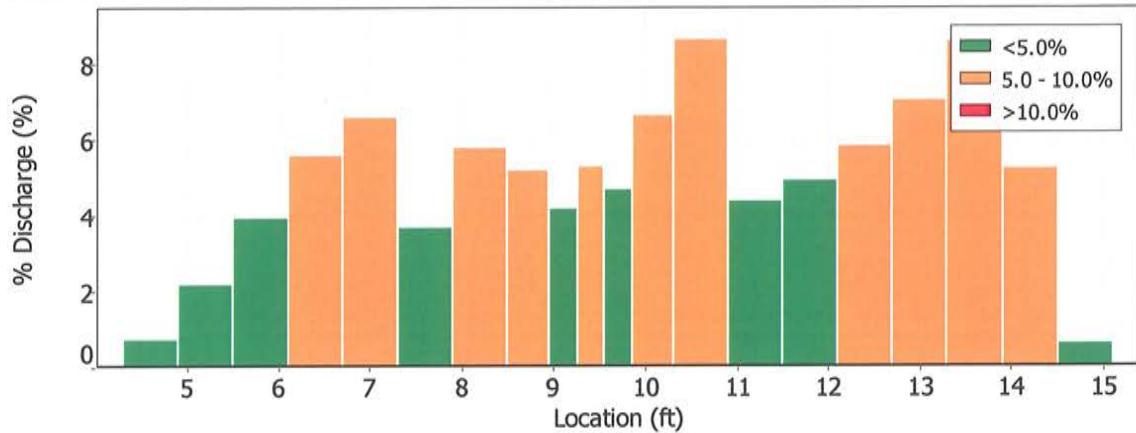
| File Information | | Site Details | | | | | | | | | | |
|----------------------|---------------------|-----------------------|-----------------|--------------|------|--------------|---------------|-------------|---------------|--------------|---------------|------------|
| File Name | CSC113.WAD | Site Name | CSC113 | | | | | | | | | |
| Start Date and Time | 2011/06/28 09:40:18 | Operator(s) | RB | | | | | | | | | |
| System Information | | Units | (English Units) | | | | | | | | | |
| Sensor Type | FlowTracker | Distance | ft | | | | | | | | | |
| Serial # | P3514 | Velocity | ft/s | | | | | | | | | |
| CPU Firmware Version | 3.7 | Area | ft^2 | | | | | | | | | |
| Software Ver | 2.20 | Discharge | cfs | | | | | | | | | |
| Summary | | Discharge Uncertainty | | | | | | | | | | |
| Averaging Int. | 40 | # Stations | 22 | | | | | | | | | |
| Start Edge | REW | Total Width | 11.401 | | | | | | | | | |
| Mean SNR | 43.7 dB | Total Area | 11.536 | | | | | | | | | |
| Mean Temp | 41.46 °F | Mean Depth | 1.012 | | | | | | | | | |
| Disch. Equation | Mid-Section | Mean Velocity | 3.0922 | | | | | | | | | |
| | | Total Discharge | 35.6719 | | | | | | | | | |
| Measurement Results | | | | | | | | | | | | |
| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
| 0 | 09:40 | 4.00 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| 1 | 09:41 | 4.60 | 0.6 | 0.500 | 0.6 | 0.200 | 0.8950 | 1.00 | 0.8950 | 0.300 | 0.2685 | 0.8 |
| 2 | <i>09:42</i> | 5.20 | 0.6 | <i>0.650</i> | 0.6 | <i>0.260</i> | <i>1.9938</i> | <i>1.00</i> | <i>1.9938</i> | <i>0.390</i> | <i>0.7776</i> | <i>2.2</i> |
| 3 | <i>09:43</i> | 5.80 | 0.6 | <i>0.800</i> | 0.6 | <i>0.320</i> | <i>2.9344</i> | <i>1.00</i> | <i>2.9344</i> | <i>0.480</i> | <i>1.4084</i> | <i>3.9</i> |
| 4 | 09:44 | 6.40 | 0.6 | 1.000 | 0.6 | 0.400 | 3.3222 | 1.00 | 3.3222 | 0.600 | 1.9935 | 5.6 |
| 5 | <i>09:45</i> | 7.00 | 0.6 | <i>1.000</i> | 0.6 | <i>0.400</i> | <i>3.9177</i> | <i>1.00</i> | <i>3.9177</i> | <i>0.600</i> | <i>2.3508</i> | <i>6.6</i> |
| 6 | 09:46 | 7.60 | 0.6 | 0.900 | 0.6 | 0.360 | 2.4318 | 1.00 | 2.4318 | 0.540 | 1.3132 | 3.7 |
| 7 | 09:48 | 8.20 | 0.6 | 0.800 | 0.6 | 0.320 | 4.3100 | 1.00 | 4.3100 | 0.480 | 2.0687 | 5.8 |
| 8 | 09:50 | 8.80 | 0.6 | 1.100 | 0.6 | 0.440 | 3.7516 | 1.00 | 3.7516 | 0.495 | 1.8564 | 5.2 |
| 9 | 10:02 | 9.10 | 0.6 | 1.100 | 0.6 | 0.440 | 4.5489 | 1.00 | 4.5489 | 0.330 | 1.5014 | 4.2 |
| 10 | <i>09:51</i> | 9.40 | 0.6 | <i>1.200</i> | 0.6 | <i>0.480</i> | <i>5.2228</i> | <i>1.00</i> | <i>5.2228</i> | <i>0.360</i> | <i>1.8806</i> | <i>5.3</i> |
| 11 | <i>10:03</i> | 9.70 | 0.6 | <i>1.000</i> | 0.6 | <i>0.400</i> | <i>5.5722</i> | <i>1.00</i> | <i>5.5722</i> | <i>0.300</i> | <i>1.6718</i> | <i>4.7</i> |
| 12 | 09:52 | 10.00 | 0.6 | 1.200 | 0.6 | 0.480 | 4.4055 | 1.00 | 4.4055 | 0.540 | 2.3808 | 6.7 |
| 13 | <i>09:53</i> | 10.60 | 0.6 | <i>1.200</i> | 0.6 | <i>0.480</i> | <i>4.2956</i> | <i>1.00</i> | <i>4.2956</i> | <i>0.720</i> | <i>3.0935</i> | <i>8.7</i> |
| 14 | 09:54 | 11.20 | 0.6 | 1.400 | 0.6 | 0.560 | 1.8619 | 1.00 | 1.8619 | 0.840 | 1.5641 | 4.4 |
| 15 | 09:55 | 11.80 | 0.6 | 1.400 | 0.6 | 0.560 | 2.1060 | 1.00 | 2.1060 | 0.840 | 1.7691 | 5.0 |
| 16 | 09:56 | 12.40 | 0.6 | 1.300 | 0.6 | 0.520 | 2.6844 | 1.00 | 2.6844 | 0.780 | 2.0938 | 5.9 |
| 17 | <i>09:57</i> | 13.00 | 0.6 | <i>1.200</i> | 0.6 | <i>0.480</i> | <i>3.4944</i> | <i>1.00</i> | <i>3.4944</i> | <i>0.720</i> | <i>2.5165</i> | <i>7.1</i> |
| 18 | 09:58 | 13.60 | 0.6 | 1.400 | 0.6 | 0.560 | 3.6473 | 1.00 | 3.6473 | 0.840 | 3.0639 | 8.6 |
| 19 | <i>09:59</i> | 14.20 | 0.6 | <i>1.400</i> | 0.6 | <i>0.560</i> | <i>2.2306</i> | <i>1.00</i> | <i>2.2306</i> | <i>0.840</i> | <i>1.8739</i> | <i>5.3</i> |
| 20 | 10:00 | 14.80 | 0.6 | 0.900 | 0.6 | 0.360 | 0.4170 | 1.00 | 0.4170 | 0.540 | 0.2252 | 0.6 |
| 21 | 10:00 | 15.40 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File InformationFile Name
Start Date and TimeCSC113.WAD
2011/06/28 09:40:18**Site Details**Site Name
Operator(s)CSC113
RB



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

File Name CSC113.WAD
Start Date and Time 2011/06/28 09:40:18

Site Details

Site Name CSC113
Operator(s) RB

Quality Control

| St | Loc | %Dep | Message |
|----|-------|------|----------------------------|
| 2 | 5.20 | 0.6 | High standard error: 0.157 |
| 3 | 5.80 | 0.6 | High standard error: 0.157 |
| 5 | 7.00 | 0.6 | High standard error: 0.205 |
| 19 | 14.20 | 0.6 | High number of spikes: 5 |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

| File Information | | Site Details | | | | | | | | | | | |
|------------------------------|---------------------|------------------------|-----------------|------------|--------------|------------|--------------|----------------|-------------|----------------|--------------|----------------|-------------|
| File Name | CSC114.WAD | Site Name | CSC114 | | | | | | | | | | |
| Start Date and Time | | | | | | | | | | | | | |
| Start Date and Time | 2011/06/28 10:34:46 | Operator(s) | RB | | | | | | | | | | |
| System Information | | | | | | | | | | | | | |
| Sensor Type | FlowTracker | Units | (English Units) | | | | | | | | | | |
| Serial # | P3514 | Distance | ft | | | | | | | | | | |
| CPU Firmware Version | 3.7 | Velocity | ft/s | | | | | | | | | | |
| Software Ver | 2.20 | Area | ft^2 | | | | | | | | | | |
| | | Discharge | cfs | | | | | | | | | | |
| Summary | | | | | | | | | | | | | |
| Averaging Int. | 40 | # Stations | 23 | | | | | | | | | | |
| Start Edge | REW | Total Width | 4.798 | | | | | | | | | | |
| Mean SNR | 31.9 dB | Total Area | 1.308 | | | | | | | | | | |
| Mean Temp | 50.07 °F | Mean Depth | 0.273 | | | | | | | | | | |
| Disch. Equation | Mid-Section | Mean Velocity | 0.4242 | | | | | | | | | | |
| | | Total Discharge | 0.5549 | | | | | | | | | | |
| Discharge Uncertainty | | | | | | | | | | | | | |
| Category | ISO | Stats | | | | | | | | | | | |
| Accuracy | 1.0% | 1.0% | | | | | | | | | | | |
| Depth | 0.4% | 1.5% | | | | | | | | | | | |
| Velocity | 1.3% | 13.2% | | | | | | | | | | | |
| Width | 0.1% | 0.1% | | | | | | | | | | | |
| Method | 2.1% | - | | | | | | | | | | | |
| # Stations | 2.2% | - | | | | | | | | | | | |
| Overall | 3.5% | 13.4% | | | | | | | | | | | |
| Measurement Results | | | | | | | | | | | | | |
| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q | |
| 0 | 10:34 | 2.00 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 | |
| 1 | 10:34 | 2.30 | | 0.6 | 0.200 | 0.6 | 0.080 | 0.0105 | 1.00 | 0.0105 | 0.060 | 0.0006 | 0.1 |
| 2 | 10:35 | 2.60 | | 0.6 | 0.250 | 0.6 | 0.100 | 0.0958 | 1.00 | 0.0958 | 0.075 | 0.0072 | 1.3 |
| 3 | 10:36 | 2.90 | | 0.6 | 0.250 | 0.6 | 0.100 | 0.2077 | 1.00 | 0.2077 | 0.075 | 0.0156 | 2.8 |
| 4 | 10:37 | 3.20 | | 0.6 | 0.250 | 0.6 | 0.100 | 1.1204 | 1.00 | 1.1204 | 0.056 | 0.0631 | 11.4 |
| 5 | 10:50 | 3.35 | | 0.6 | 0.250 | 0.6 | 0.100 | 0.8061 | 1.00 | 0.8061 | 0.037 | 0.0302 | 5.4 |
| 6 | <i>10:38</i> | <i>3.50</i> | | <i>0.6</i> | <i>0.250</i> | <i>0.6</i> | <i>0.100</i> | <i>0.8566</i> | <i>1.00</i> | <i>0.8566</i> | <i>0.037</i> | <i>0.0321</i> | <i>5.8</i> |
| 7 | 10:51 | 3.65 | | 0.6 | 0.250 | 0.6 | 0.100 | 0.8235 | 1.00 | 0.8235 | 0.037 | 0.0309 | 5.6 |
| 8 | 10:39 | 3.80 | | 0.6 | 0.250 | 0.6 | 0.100 | 0.6414 | 1.00 | 0.6414 | 0.038 | 0.0241 | 4.3 |
| 9 | <i>10:56</i> | <i>3.95</i> | | <i>0.6</i> | <i>0.250</i> | <i>0.6</i> | <i>0.100</i> | <i>0.6280</i> | <i>1.00</i> | <i>0.6280</i> | <i>0.037</i> | <i>0.0235</i> | <i>4.2</i> |
| 10 | 10:40 | 4.10 | | 0.6 | 0.250 | 0.6 | 0.100 | 1.0961 | 1.00 | 1.0961 | 0.037 | 0.0411 | 7.4 |
| 11 | <i>10:52</i> | <i>4.25</i> | | <i>0.6</i> | <i>0.250</i> | <i>0.6</i> | <i>0.100</i> | <i>0.8862</i> | <i>1.00</i> | <i>0.8862</i> | <i>0.037</i> | <i>0.0332</i> | <i>6.0</i> |
| 12 | 10:41 | 4.40 | | 0.6 | 0.250 | 0.6 | 0.100 | 1.0046 | 1.00 | 1.0046 | 0.037 | 0.0377 | 6.8 |
| 13 | 10:53 | 4.55 | | 0.6 | 0.300 | 0.6 | 0.120 | 1.0997 | 1.00 | 1.0997 | 0.045 | 0.0494 | 8.9 |
| 14 | 10:42 | 4.70 | | 0.6 | 0.300 | 0.6 | 0.120 | 1.3776 | 1.00 | 1.3776 | 0.045 | 0.0620 | 11.2 |
| 15 | 10:55 | 4.85 | | 0.6 | 0.300 | 0.6 | 0.120 | 0.1824 | 1.00 | 0.1824 | 0.045 | 0.0082 | 1.5 |
| 16 | 10:43 | 5.00 | | 0.6 | 0.300 | 0.6 | 0.120 | 0.0030 | 1.00 | 0.0030 | 0.067 | 0.0002 | 0.0 |
| 17 | <i>10:44</i> | <i>5.30</i> | | <i>0.6</i> | <i>0.350</i> | <i>0.6</i> | <i>0.140</i> | <i>-0.0308</i> | <i>1.00</i> | <i>-0.0308</i> | <i>0.105</i> | <i>-0.0032</i> | <i>-0.6</i> |
| 18 | 10:45 | 5.60 | | 0.6 | 0.350 | 0.6 | 0.140 | 0.2142 | 1.00 | 0.2142 | 0.105 | 0.0225 | 4.1 |
| 19 | 10:46 | 5.90 | | 0.6 | 0.400 | 0.6 | 0.160 | 0.4728 | 1.00 | 0.4728 | 0.120 | 0.0567 | 10.2 |
| 20 | <i>10:47</i> | <i>6.20</i> | | <i>0.6</i> | <i>0.350</i> | <i>0.6</i> | <i>0.140</i> | <i>0.2470</i> | <i>1.00</i> | <i>0.2470</i> | <i>0.105</i> | <i>0.0259</i> | <i>4.7</i> |
| 21 | <i>10:48</i> | <i>6.50</i> | | <i>0.6</i> | <i>0.350</i> | <i>0.6</i> | <i>0.140</i> | <i>-0.0581</i> | <i>1.00</i> | <i>-0.0581</i> | <i>0.105</i> | <i>-0.0061</i> | <i>-1.1</i> |
| 22 | 10:48 | 6.80 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 | |

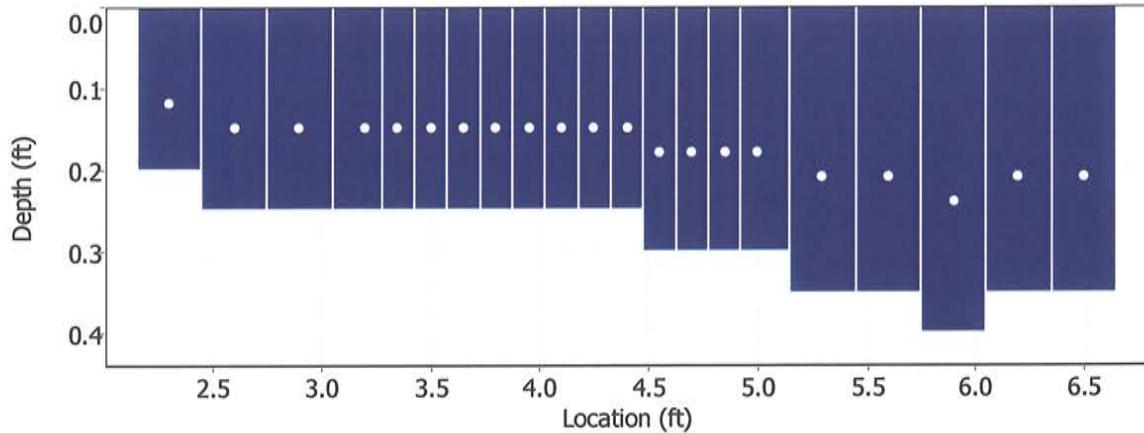
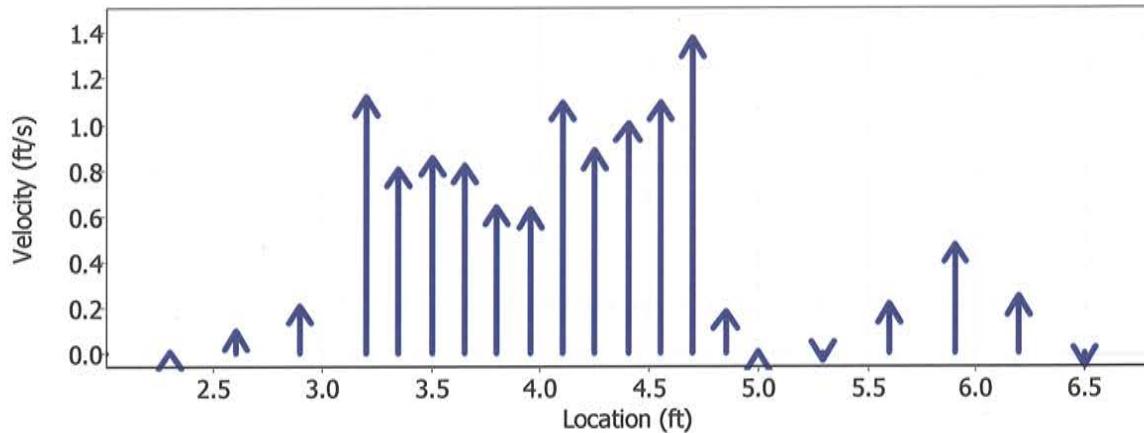
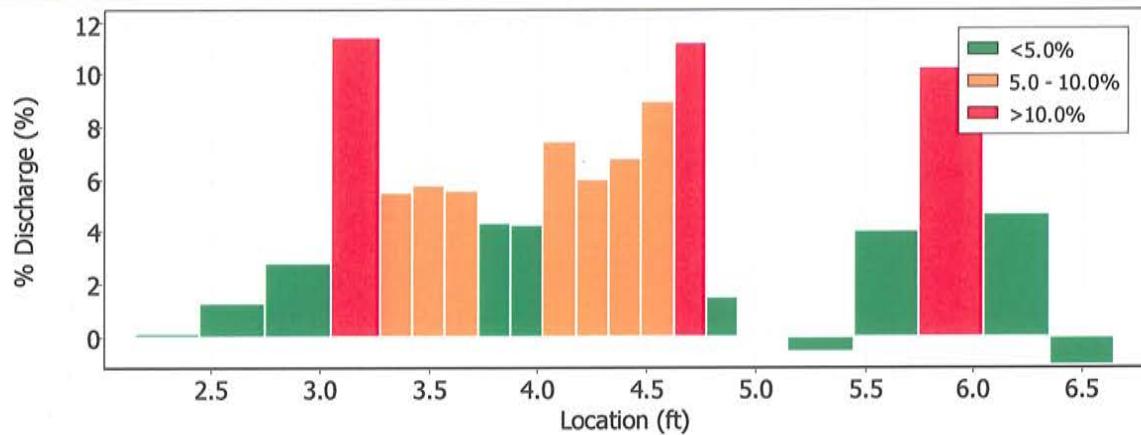
Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

| File Information | | Site Details | |
|---------------------|---------------------|--------------|--------|
| File Name | CSC114.WAD | Site Name | CSC114 |
| Start Date and Time | 2011/06/28 10:34:46 | Operator(s) | RB |





Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

File Name
Start Date and Time

CSC114.WAD
2011/06/28 10:34:46

Site Details

Site Name
Operator(s)

CSC114
RB

Quality Control

| St | Loc | %Dep | Message |
|----|------|------|----------------------------|
| 6 | 3.50 | 0.6 | High standard error: 0.043 |
| 9 | 3.95 | 0.6 | High standard error: 0.033 |
| 11 | 4.25 | 0.6 | High standard error: 0.062 |
| 17 | 5.30 | 0.6 | High angle: 178 |
| 20 | 6.20 | 0.6 | High angle: 22 |
| 21 | 6.50 | 0.6 | High angle: 162 |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

| | |
|---------------------|---------------------|
| File Name | CSC115.WAD |
| Start Date and Time | 2011/06/28 11:02:29 |

Site Details

| | |
|-------------|--------|
| Site Name | CSC115 |
| Operator(s) | RB |

System Information

| | |
|----------------------|-------------|
| Sensor Type | FlowTracker |
| Serial # | P3514 |
| CPU Firmware Version | 3.7 |
| Software Ver | 2.20 |

Units (English Units)

| | |
|-----------|------|
| Distance | ft |
| Velocity | ft/s |
| Area | ft^2 |
| Discharge | cfs |

Discharge Uncertainty

| Category | ISO | Stats |
|----------------|-------------|-------------|
| Accuracy | 1.0% | 1.0% |
| Depth | 0.4% | 1.2% |
| Velocity | 1.2% | 2.6% |
| Width | 0.1% | 0.1% |
| Method | 2.0% | - |
| # Stations | 2.8% | - |
| Overall | 3.8% | 3.0% |

Summary

| | | | |
|-----------------|-------------|------------------------|---------------|
| Averaging Int. | 40 | # Stations | 18 |
| Start Edge | REW | Total Width | 2.001 |
| Mean SNR | 37.8 dB | Total Area | 0.905 |
| Mean Temp | 49.32 °F | Mean Depth | 0.453 |
| Disch. Equation | Mid-Section | Mean Velocity | 0.7590 |
| | | Total Discharge | 0.6873 |

Measurement Results

| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
|----|--------------|-------------|------------|--------------|------------|--------------|---------------|-------------|---------------|--------------|---------------|-------------|
| 0 | 11:02 | 1.00 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| 1 | <i>11:02</i> | <i>1.50</i> | <i>0.6</i> | <i>0.500</i> | <i>0.6</i> | <i>0.200</i> | <i>0.5787</i> | <i>1.00</i> | <i>0.5787</i> | <i>0.137</i> | <i>0.0796</i> | <i>11.6</i> |
| 2 | 11:16 | 1.55 | 0.6 | 0.500 | 0.6 | 0.200 | 0.9055 | 1.00 | 0.9055 | 0.025 | 0.0227 | 3.3 |
| 3 | 11:03 | 1.60 | 0.6 | 0.500 | 0.6 | 0.200 | 1.1972 | 1.00 | 1.1972 | 0.038 | 0.0450 | 6.5 |
| 4 | 11:04 | 1.70 | 0.6 | 0.500 | 0.6 | 0.200 | 1.2139 | 1.00 | 1.2139 | 0.050 | 0.0607 | 8.8 |
| 5 | 11:05 | 1.80 | 0.6 | 0.500 | 0.6 | 0.200 | 1.1194 | 1.00 | 1.1194 | 0.050 | 0.0560 | 8.1 |
| 6 | 11:06 | 1.90 | 0.6 | 0.500 | 0.6 | 0.200 | 1.0860 | 1.00 | 1.0860 | 0.050 | 0.0543 | 7.9 |
| 7 | 11:06 | 2.00 | 0.6 | 0.550 | 0.6 | 0.220 | 1.0728 | 1.00 | 1.0728 | 0.055 | 0.0590 | 8.6 |
| 8 | 11:07 | 2.10 | 0.6 | 0.550 | 0.6 | 0.220 | 0.8566 | 1.00 | 0.8566 | 0.055 | 0.0471 | 6.9 |
| 9 | 11:08 | 2.20 | 0.6 | 0.600 | 0.6 | 0.240 | 0.7379 | 1.00 | 0.7379 | 0.060 | 0.0443 | 6.4 |
| 10 | 11:09 | 2.30 | 0.6 | 0.600 | 0.6 | 0.240 | 0.8392 | 1.00 | 0.8392 | 0.060 | 0.0504 | 7.3 |
| 11 | 11:10 | 2.40 | 0.6 | 0.600 | 0.6 | 0.240 | 0.6946 | 1.00 | 0.6946 | 0.060 | 0.0417 | 6.1 |
| 12 | <i>11:11</i> | <i>2.50</i> | <i>0.6</i> | <i>0.650</i> | <i>0.6</i> | <i>0.260</i> | <i>0.4843</i> | <i>1.00</i> | <i>0.4843</i> | <i>0.065</i> | <i>0.0315</i> | <i>4.6</i> |
| 13 | 11:12 | 2.60 | 0.6 | 0.600 | 0.6 | 0.240 | 0.5627 | 1.00 | 0.5627 | 0.060 | 0.0338 | 4.9 |
| 14 | 11:13 | 2.70 | 0.6 | 0.500 | 0.6 | 0.200 | 0.4708 | 1.00 | 0.4708 | 0.050 | 0.0236 | 3.4 |
| 15 | 11:14 | 2.80 | 0.6 | 0.500 | 0.6 | 0.200 | 0.4039 | 1.00 | 0.4039 | 0.050 | 0.0202 | 2.9 |
| 16 | 11:15 | 2.90 | 0.6 | 0.400 | 0.6 | 0.160 | 0.4357 | 1.00 | 0.4357 | 0.040 | 0.0174 | 2.5 |
| 17 | 11:15 | 3.00 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

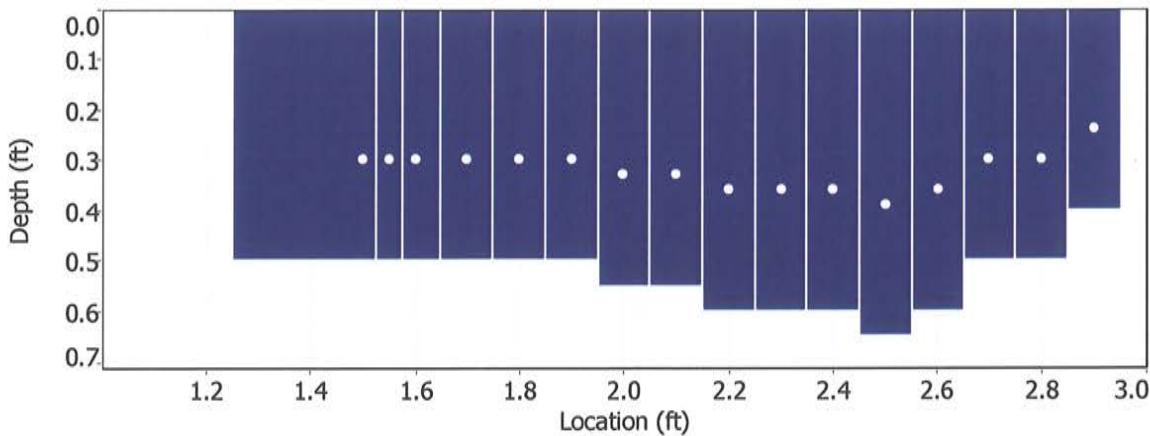
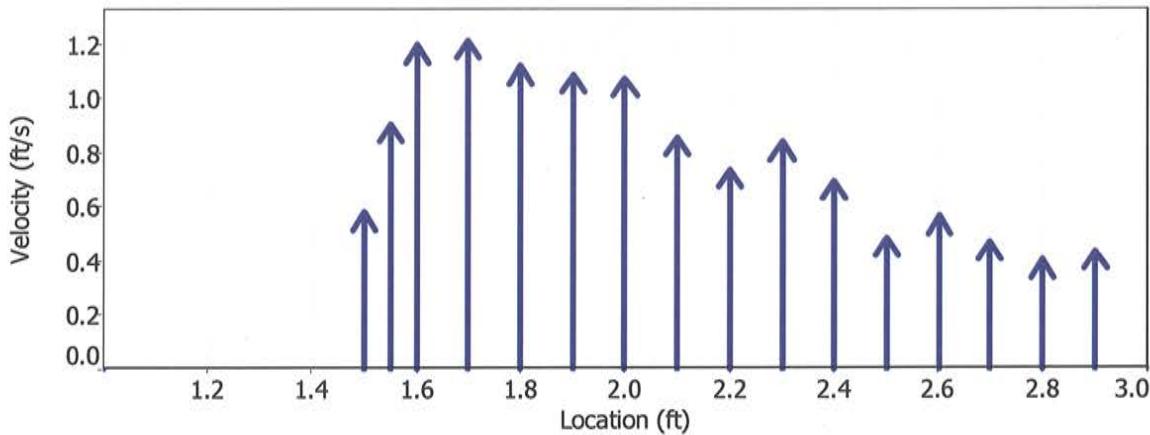
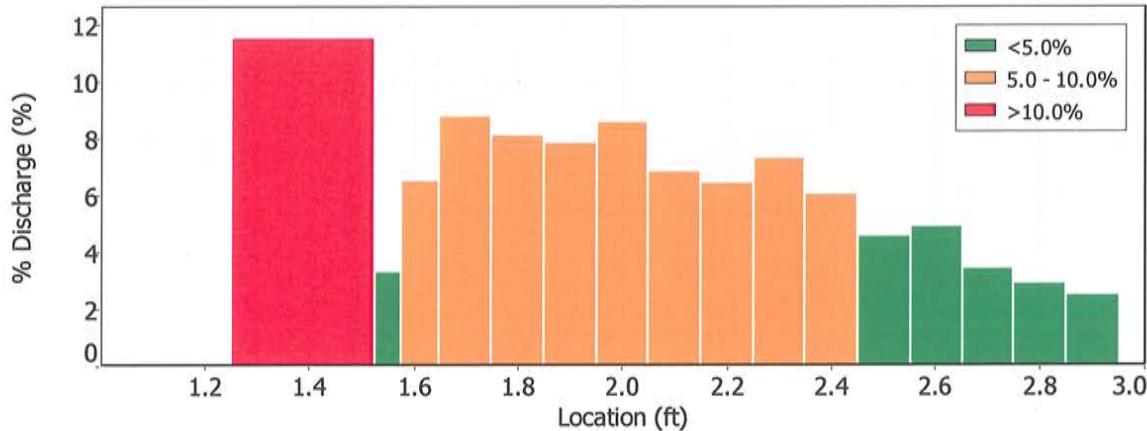
File Name
Start Date and Time

CSC115.WAD
2011/06/28 11:02:29

Site Details

Site Name
Operator(s)

CSC115
RB





Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

File Name CSC115.WAD
Start Date and Time 2011/06/28 11:02:29

Site Details

Site Name CSC115
Operator(s) RB

Quality Control

| St | Loc | %Dep | Message |
|----|------|------|----------------------------|
| 1 | 1.50 | 0.6 | High standard error: 0.037 |
| 12 | 2.50 | 0.6 | High standard error: 0.052 |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

| File Information | | Site Details | |
|----------------------|---------------------|-----------------------|----------------|
| File Name | CSC116.WAD | Site Name | CSC116 |
| Start Date and Time | 2011/06/28 12:59:09 | Operator(s) | RB |
| System Information | | Discharge Uncertainty | |
| Sensor Type | FlowTracker | Category | ISO |
| Serial # | P3514 | Accuracy | 1.0% |
| CPU Firmware Version | 3.7 | Depth | 0.2% |
| Software Ver | 2.20 | Velocity | 1.4% |
| | | Width | 0.1% |
| | | Method | 1.9% |
| | | # Stations | 2.5% |
| | | Overall | 3.6% |
| | | Stats | 7.2% |
| Summary | | | |
| Averaging Int. | 40 | # Stations | 20 |
| Start Edge | REW | Total Width | 16.199 |
| Mean SNR | 45.3 dB | Total Area | 13.251 |
| Mean Temp | 42.84 °F | Mean Depth | 0.818 |
| Disch. Equation | Mid-Section | Mean Velocity | 2.2410 |
| | | Total Discharge | 29.6959 |

| Measurement Results | | | | | | | | | | | | |
|---------------------|--------------|--------------|------------|--------------|------------|--------------|---------------|-------------|---------------|--------------|---------------|------------|
| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
| 0 | 12:59 | 4.00 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| 1 | 12:59 | 4.90 | 0.6 | 0.400 | 0.6 | 0.160 | 1.5157 | 1.00 | 1.5157 | 0.360 | 0.5455 | 1.8 |
| 2 | 13:00 | 5.80 | 0.6 | 0.450 | 0.6 | 0.180 | 1.1736 | 1.00 | 1.1736 | 0.405 | 0.4754 | 1.6 |
| 3 | <i>13:01</i> | <i>6.70</i> | <i>0.6</i> | <i>0.550</i> | <i>0.6</i> | <i>0.220</i> | <i>2.3786</i> | <i>1.00</i> | <i>2.3786</i> | <i>0.495</i> | <i>1.1770</i> | <i>4.0</i> |
| 4 | 13:02 | 7.60 | 0.6 | 0.550 | 0.6 | 0.220 | 2.0846 | 1.00 | 2.0846 | 0.495 | 1.0316 | 3.5 |
| 5 | 13:03 | 8.50 | 0.6 | 0.800 | 0.6 | 0.320 | 2.7933 | 1.00 | 2.7933 | 0.720 | 2.0107 | 6.8 |
| 6 | 13:05 | 9.40 | 0.6 | 1.100 | 0.6 | 0.440 | 2.9751 | 1.00 | 2.9751 | 0.743 | 2.2098 | 7.4 |
| 7 | 13:21 | 9.85 | 0.6 | 1.000 | 0.6 | 0.400 | 4.7001 | 1.00 | 4.7001 | 0.450 | 2.1149 | 7.1 |
| 8 | 13:06 | 10.30 | 0.6 | 1.000 | 0.6 | 0.400 | 3.8241 | 1.00 | 3.8241 | 0.675 | 2.5802 | 8.7 |
| 9 | 13:07 | 11.20 | 0.6 | 1.000 | 0.6 | 0.400 | 3.0571 | 1.00 | 3.0571 | 0.900 | 2.7512 | 9.3 |
| 10 | <i>13:08</i> | <i>12.10</i> | <i>0.6</i> | <i>0.900</i> | <i>0.6</i> | <i>0.360</i> | <i>2.6690</i> | <i>1.00</i> | <i>2.6690</i> | <i>0.810</i> | <i>2.1615</i> | <i>7.3</i> |
| 11 | <i>13:09</i> | <i>13.00</i> | <i>0.6</i> | <i>0.900</i> | <i>0.6</i> | <i>0.360</i> | <i>2.3346</i> | <i>1.00</i> | <i>2.3346</i> | <i>0.810</i> | <i>1.8908</i> | <i>6.4</i> |
| 12 | 13:10 | 13.90 | 0.6 | 0.600 | 0.6 | 0.240 | 2.9865 | 1.00 | 2.9865 | 0.540 | 1.6128 | 5.4 |
| 13 | <i>13:11</i> | <i>14.80</i> | <i>0.6</i> | <i>1.000</i> | <i>0.6</i> | <i>0.400</i> | <i>1.8478</i> | <i>1.00</i> | <i>1.8478</i> | <i>0.900</i> | <i>1.6629</i> | <i>5.6</i> |
| 14 | <i>13:13</i> | <i>15.70</i> | <i>0.6</i> | <i>1.000</i> | <i>0.6</i> | <i>0.400</i> | <i>2.1535</i> | <i>1.00</i> | <i>2.1535</i> | <i>0.900</i> | <i>1.9380</i> | <i>6.5</i> |
| 15 | <i>13:15</i> | <i>16.60</i> | <i>0.6</i> | <i>1.300</i> | <i>0.6</i> | <i>0.520</i> | <i>2.1030</i> | <i>1.00</i> | <i>2.1030</i> | <i>1.170</i> | <i>2.4601</i> | <i>8.3</i> |
| 16 | <i>13:17</i> | <i>17.50</i> | <i>0.6</i> | <i>1.600</i> | <i>0.6</i> | <i>0.640</i> | <i>1.1906</i> | <i>1.00</i> | <i>1.1906</i> | <i>1.440</i> | <i>1.7144</i> | <i>5.8</i> |
| 17 | 13:18 | 18.40 | 0.6 | 1.100 | 0.6 | 0.440 | 1.3150 | 1.00 | 1.3150 | 0.990 | 1.3018 | 4.4 |
| 18 | <i>13:19</i> | <i>19.30</i> | <i>0.6</i> | <i>0.500</i> | <i>0.6</i> | <i>0.200</i> | <i>0.1273</i> | <i>1.00</i> | <i>0.1273</i> | <i>0.450</i> | <i>0.0573</i> | <i>0.2</i> |
| 19 | <i>13:19</i> | <i>20.20</i> | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |

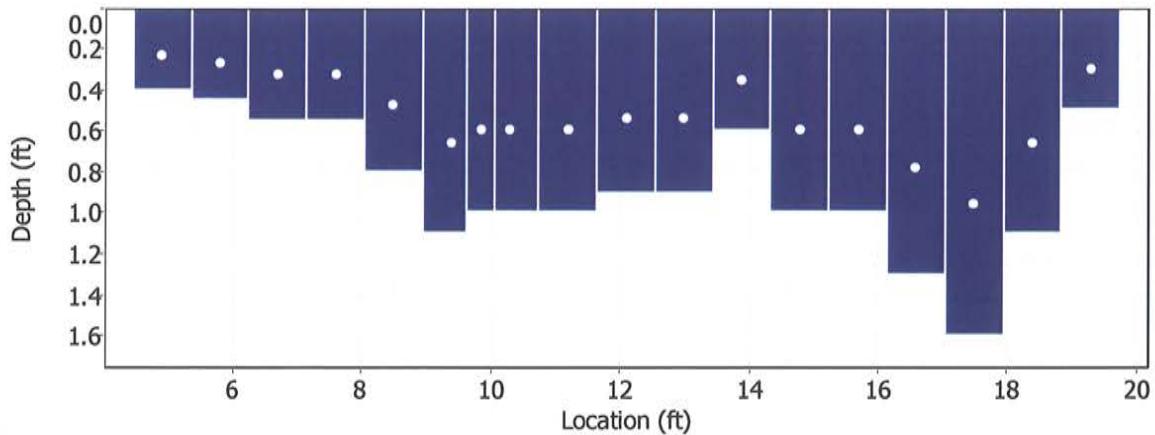
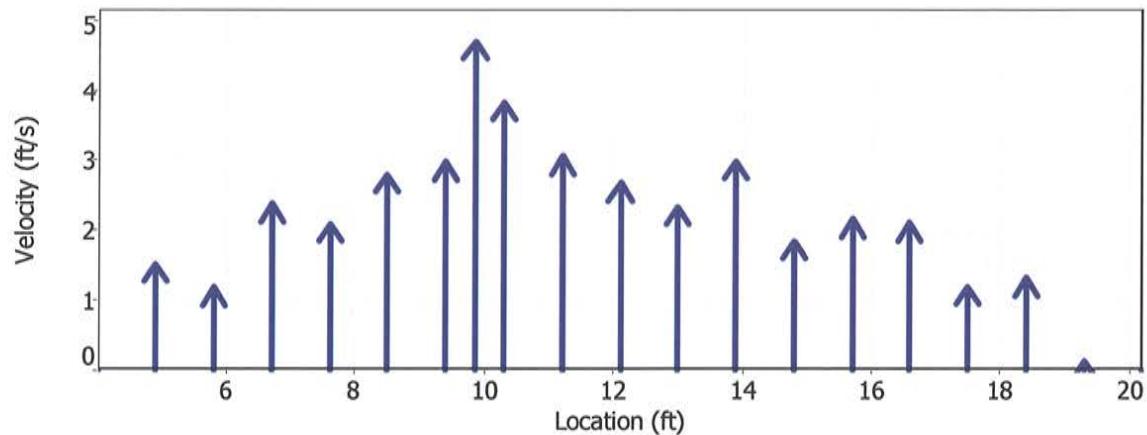
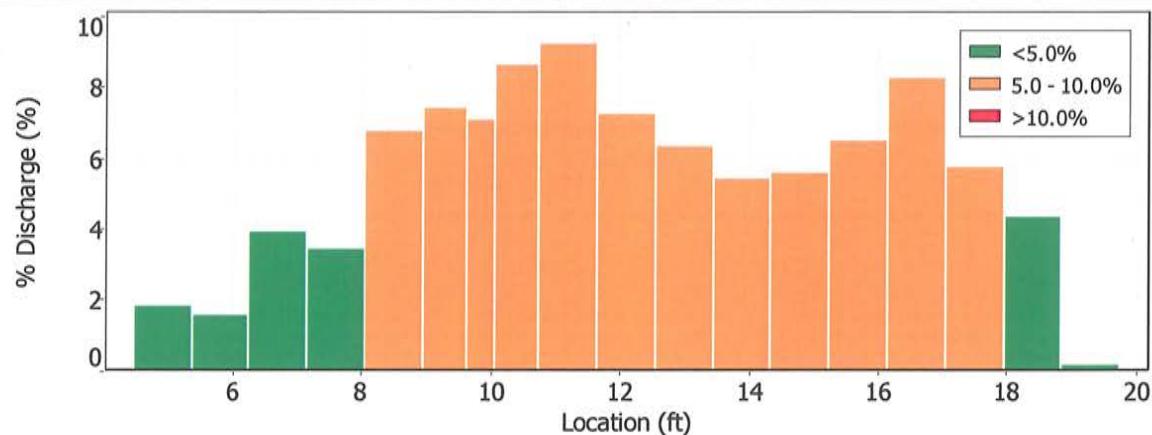
Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

| File Information | | Site Details | |
|---------------------|---------------------|--------------|--------|
| File Name | CSC116.WAD | Site Name | CSC116 |
| Start Date and Time | 2011/06/28 12:59:09 | Operator(s) | RB |





Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

File Name
Start Date and Time

CSC116.WAD
2011/06/28 12:59:09

Site Details

Site Name
Operator(s)

CSC116
RB

Quality Control

| St | Loc | %Dep | Message |
|----|-------|------|----------------------------|
| 3 | 6.70 | 0.6 | High angle: -22 |
| 10 | 12.10 | 0.6 | High angle: -24 |
| 11 | 13.00 | 0.6 | High angle: -22 |
| 13 | 14.80 | 0.6 | High angle: -29 |
| | | 0.6 | High standard error: 0.148 |
| 14 | 15.70 | 0.6 | High standard error: 0.217 |
| 15 | 16.60 | 0.6 | High angle: -20 |
| 16 | 17.50 | 0.6 | High angle: -30 |
| | | 0.6 | High standard error: 0.142 |
| 18 | 19.30 | 0.6 | High angle: -25 |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

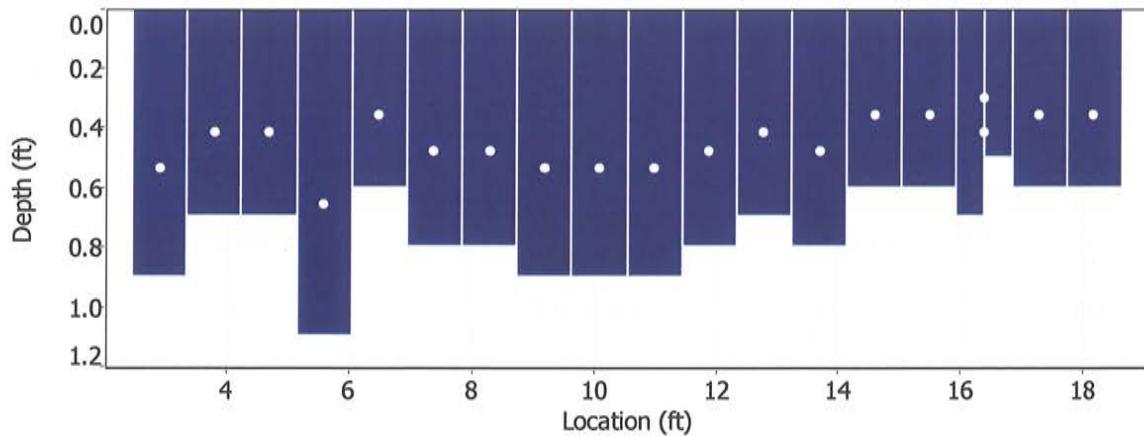
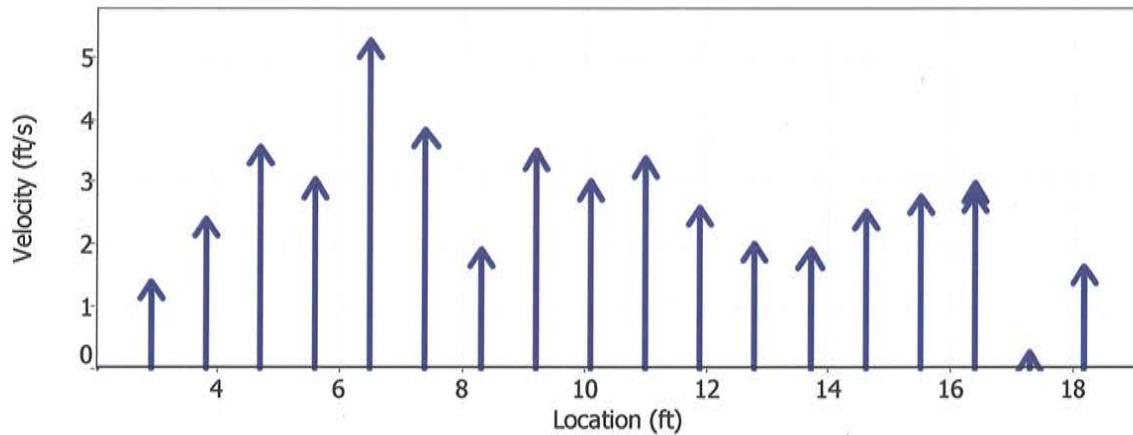
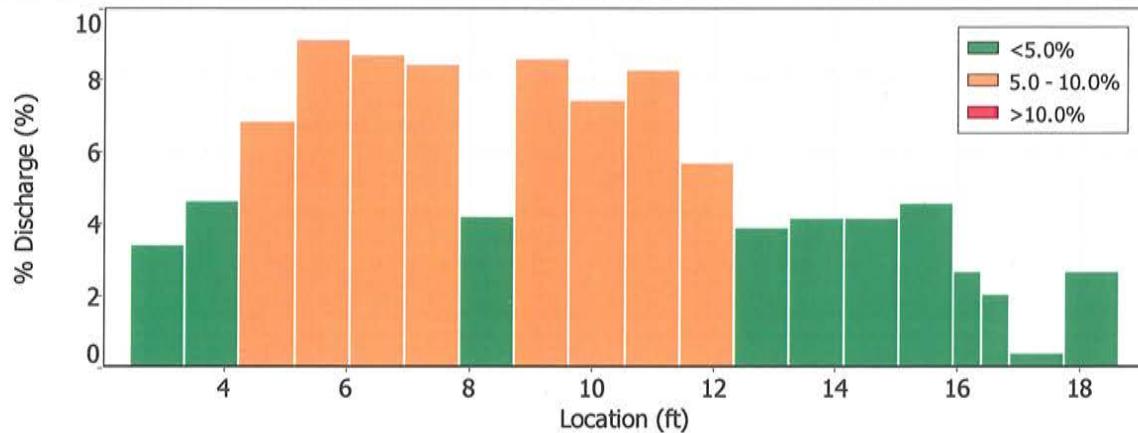
| File Information | | Site Details | | | | | | | | | | |
|----------------------|---------------------|------------------------|----------------|-------|------|-------|--------|----------|--------|-------|--------|-----|
| File Name | CSC116A.WAD | Site Name | CSC116A | | | | | | | | | |
| Start Date and Time | 2011/06/28 11:42:43 | Operator(s) | RB | | | | | | | | | |
| System Information | | Units (English Units) | | | | | | | | | | |
| Sensor Type | FlowTracker | Distance | ft | | | | | | | | | |
| Serial # | P3514 | Velocity | ft/s | | | | | | | | | |
| CPU Firmware Version | 3.7 | Area | ft^2 | | | | | | | | | |
| Software Ver | 2.20 | Discharge | cfs | | | | | | | | | |
| Summary | | Discharge Uncertainty | | | | | | | | | | |
| Averaging Int. | 40 | # Stations | 21 | | | | | | | | | |
| Start Edge | LEW | Total Width | 17.099 | | | | | | | | | |
| Mean SNR | 45.5 dB | Total Area | 12.239 | | | | | | | | | |
| Mean Temp | 42.26 °F | Mean Depth | 0.716 | | | | | | | | | |
| Disch. Equation | Mid-Section | Mean Velocity | 2.6796 | | | | | | | | | |
| | | Total Discharge | 32.7958 | | | | | | | | | |
| Measurement Results | | | | | | | | | | | | |
| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
| 0 | 11:42 | 2.00 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| 1 | 11:42 | 2.90 | 0.6 | 0.900 | 0.6 | 0.360 | 1.3907 | 1.00 | 1.3907 | 0.810 | 1.1263 | 3.4 |
| 2 | 11:44 | 3.80 | 0.6 | 0.700 | 0.6 | 0.280 | 2.4019 | 1.00 | 2.4019 | 0.630 | 1.5134 | 4.6 |
| 3 | 11:45 | 4.70 | 0.6 | 0.700 | 0.6 | 0.280 | 3.5614 | 1.00 | 3.5614 | 0.630 | 2.2439 | 6.8 |
| 4 | 11:47 | 5.60 | 0.6 | 1.100 | 0.6 | 0.440 | 3.0289 | 1.00 | 3.0289 | 0.990 | 2.9985 | 9.1 |
| 5 | 11:49 | 6.50 | 0.6 | 0.600 | 0.6 | 0.240 | 5.2769 | 1.00 | 5.2769 | 0.540 | 2.8496 | 8.7 |
| 6 | 11:50 | 7.40 | 0.6 | 0.800 | 0.6 | 0.320 | 3.8484 | 1.00 | 3.8484 | 0.720 | 2.7702 | 8.4 |
| 7 | 11:52 | 8.30 | 0.6 | 0.800 | 0.6 | 0.320 | 1.9134 | 1.00 | 1.9134 | 0.720 | 1.3773 | 4.2 |
| 8 | 11:53 | 9.20 | 0.6 | 0.900 | 0.6 | 0.360 | 3.4898 | 1.00 | 3.4898 | 0.810 | 2.8263 | 8.6 |
| 9 | 11:54 | 10.10 | 0.6 | 0.900 | 0.6 | 0.360 | 3.0072 | 1.00 | 3.0072 | 0.810 | 2.4355 | 7.4 |
| 10 | 11:55 | 11.00 | 0.6 | 0.900 | 0.6 | 0.360 | 3.3606 | 1.00 | 3.3606 | 0.810 | 2.7217 | 8.3 |
| 11 | 11:56 | 11.90 | 0.6 | 0.800 | 0.6 | 0.320 | 2.5899 | 1.00 | 2.5899 | 0.720 | 1.8643 | 5.7 |
| 12 | 11:57 | 12.80 | 0.6 | 0.700 | 0.6 | 0.280 | 2.0121 | 1.00 | 2.0121 | 0.630 | 1.2678 | 3.9 |
| 13 | 11:58 | 13.70 | 0.6 | 0.800 | 0.6 | 0.320 | 1.8963 | 1.00 | 1.8963 | 0.720 | 1.3650 | 4.2 |
| 14 | 11:59 | 14.60 | 0.6 | 0.600 | 0.6 | 0.240 | 2.5259 | 1.00 | 2.5259 | 0.540 | 1.3640 | 4.2 |
| 15 | 12:00 | 15.50 | 0.6 | 0.600 | 0.6 | 0.240 | 2.7769 | 1.00 | 2.7769 | 0.540 | 1.4996 | 4.6 |
| 16 | 12:01 | 16.40 | 0.6 | 0.700 | 0.6 | 0.280 | 2.7966 | 1.00 | 2.7966 | 0.315 | 0.8820 | 2.7 |
| 17 | 12:06 | 16.40 | 0.6 | 0.500 | 0.6 | 0.200 | 2.9734 | 1.00 | 2.9734 | 0.225 | 0.6690 | 2.0 |
| 18 | 12:03 | 17.30 | 0.6 | 0.600 | 0.6 | 0.240 | 0.2559 | 1.00 | 0.2559 | 0.540 | 0.1381 | 0.4 |
| 19 | 12:04 | 18.20 | 0.6 | 0.600 | 0.6 | 0.240 | 1.6355 | 1.00 | 1.6355 | 0.540 | 0.8832 | 2.7 |
| 20 | 12:04 | 19.10 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File InformationFile Name
Start Date and TimeCSC116A.WAD
2011/06/28 11:42:43**Site Details**Site Name
Operator(s)CSC116A
RB



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

File Name
Start Date and Time

CSC116A.WAD
2011/06/28 11:42:43

Site Details

Site Name
Operator(s)

CSC116A
RB

Quality Control

| St | Loc | %Dep | Message |
|----|-------|------|----------------------------|
| 1 | 2.90 | 0.6 | High angle: -22 |
| 4 | 5.60 | 0.6 | High standard error: 0.170 |
| 6 | 7.40 | 0.6 | High standard error: 0.230 |
| 7 | 8.30 | 0.6 | High angle: -25 |
| | | 0.6 | High standard error: 0.156 |
| 18 | 17.30 | 0.6 | High number of spikes: 6 |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

File Name CSC117.WAD
 Start Date and Time 2011/06/28 13:32:10

Site Details

Site Name CSC117
 Operator(s) RB

System Information

Sensor Type FlowTracker
 Serial # P3514
 CPU Firmware Version 3.7
 Software Ver 2.20

Units (English Units)

Distance ft
 Velocity ft/s
 Area ft²
 Discharge cfs

Discharge Uncertainty

| Category | ISO | Stats |
|----------------|-------------|-------------|
| Accuracy | 1.0% | 1.0% |
| Depth | 0.4% | 1.0% |
| Velocity | 2.0% | 9.2% |
| Width | 0.1% | 0.1% |
| Method | 2.0% | - |
| # Stations | 2.4% | - |
| Overall | 3.8% | 9.3% |

Summary

| | | | |
|-----------------|-------------|------------------------|---------------|
| Averaging Int. | 40 | # Stations | 21 |
| Start Edge | REW | Total Width | 1.901 |
| Mean SNR | 41.4 dB | Total Area | 0.828 |
| Mean Temp | 61.74 °F | Mean Depth | 0.436 |
| Disch. Equation | Mid-Section | Mean Velocity | 0.3333 |
| | | Total Discharge | 0.2760 |

Measurement Results

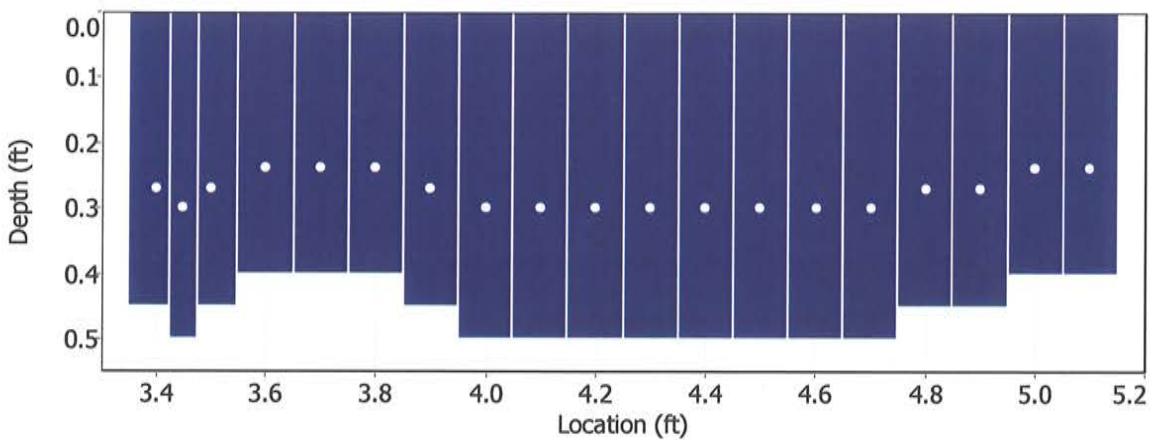
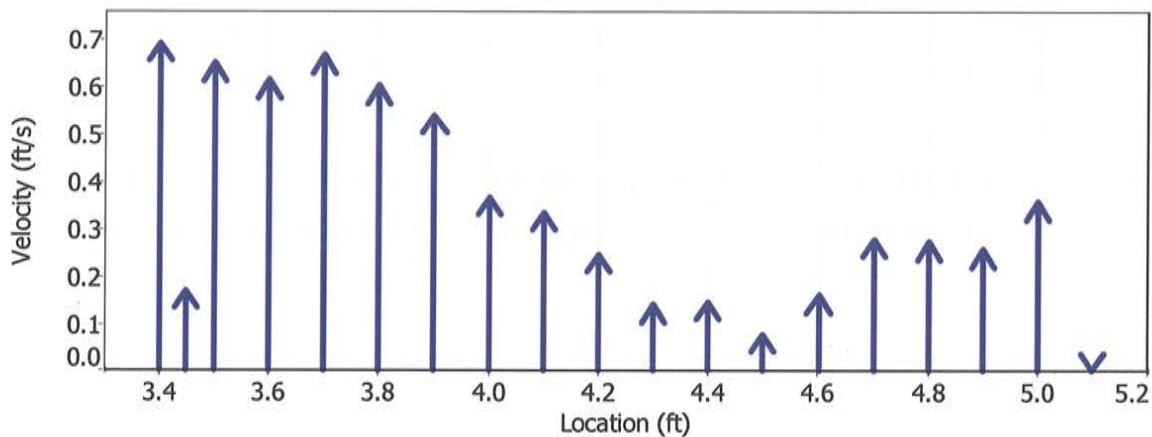
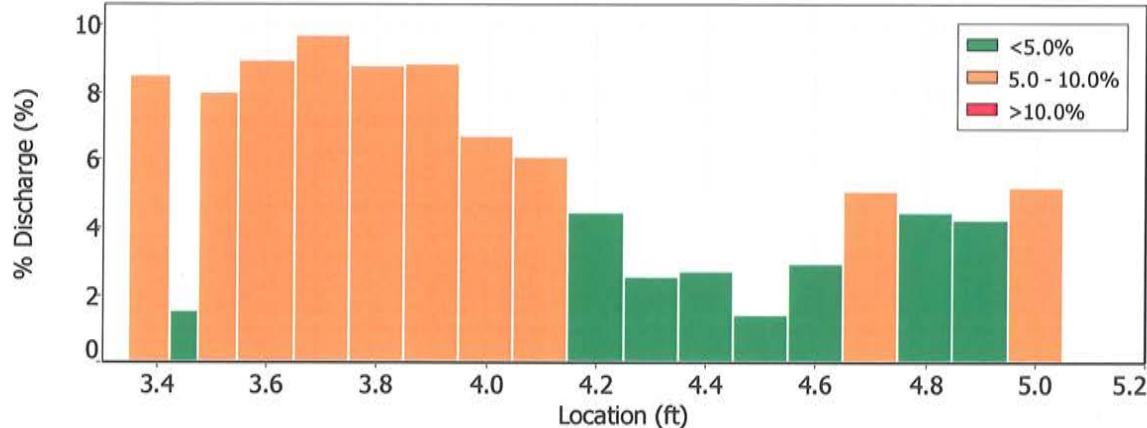
| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
|-----------|--------------|-------------|------------|--------------|------------|--------------|---------------|-------------|---------------|--------------|---------------|------------|
| 0 | 13:32 | 3.30 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| <i>1</i> | <i>13:32</i> | <i>3.40</i> | <i>0.6</i> | <i>0.450</i> | <i>0.6</i> | <i>0.180</i> | <i>0.6939</i> | <i>1.00</i> | <i>0.6939</i> | <i>0.034</i> | <i>0.0235</i> | <i>8.5</i> |
| 2 | 13:51 | 3.45 | 0.6 | 0.500 | 0.6 | 0.200 | 0.1716 | 1.00 | 0.1716 | 0.025 | 0.0043 | 1.6 |
| <i>3</i> | <i>13:34</i> | <i>3.50</i> | <i>0.6</i> | <i>0.450</i> | <i>0.6</i> | <i>0.180</i> | <i>0.6512</i> | <i>1.00</i> | <i>0.6512</i> | <i>0.034</i> | <i>0.0220</i> | <i>8.0</i> |
| 4 | 13:34 | 3.60 | 0.6 | 0.400 | 0.6 | 0.160 | 0.6152 | 1.00 | 0.6152 | 0.040 | 0.0246 | 8.9 |
| 5 | 13:35 | 3.70 | 0.6 | 0.400 | 0.6 | 0.160 | 0.6673 | 1.00 | 0.6673 | 0.040 | 0.0267 | 9.7 |
| 6 | 13:36 | 3.80 | 0.6 | 0.400 | 0.6 | 0.160 | 0.6027 | 1.00 | 0.6027 | 0.040 | 0.0241 | 8.7 |
| 7 | 13:37 | 3.90 | 0.6 | 0.450 | 0.6 | 0.180 | 0.5420 | 1.00 | 0.5420 | 0.045 | 0.0244 | 8.8 |
| 8 | 13:39 | 4.00 | 0.6 | 0.500 | 0.6 | 0.200 | 0.3688 | 1.00 | 0.3688 | 0.050 | 0.0185 | 6.7 |
| 9 | 13:40 | 4.10 | 0.6 | 0.500 | 0.6 | 0.200 | 0.3353 | 1.00 | 0.3353 | 0.050 | 0.0168 | 6.1 |
| <i>10</i> | <i>13:41</i> | <i>4.20</i> | <i>0.6</i> | <i>0.500</i> | <i>0.6</i> | <i>0.200</i> | <i>0.2470</i> | <i>1.00</i> | <i>0.2470</i> | <i>0.050</i> | <i>0.0124</i> | <i>4.5</i> |
| 11 | 13:42 | 4.30 | 0.6 | 0.500 | 0.6 | 0.200 | 0.1404 | 1.00 | 0.1404 | 0.050 | 0.0070 | 2.5 |
| 12 | 13:42 | 4.40 | 0.6 | 0.500 | 0.6 | 0.200 | 0.1483 | 1.00 | 0.1483 | 0.050 | 0.0074 | 2.7 |
| <i>13</i> | <i>13:43</i> | <i>4.50</i> | <i>0.6</i> | <i>0.500</i> | <i>0.6</i> | <i>0.200</i> | <i>0.0797</i> | <i>1.00</i> | <i>0.0797</i> | <i>0.050</i> | <i>0.0040</i> | <i>1.4</i> |
| 14 | 13:44 | 4.60 | 0.6 | 0.500 | 0.6 | 0.200 | 0.1614 | 1.00 | 0.1614 | 0.050 | 0.0081 | 2.9 |
| 15 | 13:45 | 4.70 | 0.6 | 0.500 | 0.6 | 0.200 | 0.2799 | 1.00 | 0.2799 | 0.050 | 0.0140 | 5.1 |
| 16 | 13:46 | 4.80 | 0.6 | 0.450 | 0.6 | 0.180 | 0.2740 | 1.00 | 0.2740 | 0.045 | 0.0123 | 4.5 |
| 17 | 13:47 | 4.90 | 0.6 | 0.450 | 0.6 | 0.180 | 0.2589 | 1.00 | 0.2589 | 0.045 | 0.0117 | 4.2 |
| <i>18</i> | <i>13:48</i> | <i>5.00</i> | <i>0.6</i> | <i>0.400</i> | <i>0.6</i> | <i>0.160</i> | <i>0.3579</i> | <i>1.00</i> | <i>0.3579</i> | <i>0.040</i> | <i>0.0143</i> | <i>5.2</i> |
| 19 | 13:50 | 5.10 | 0.6 | 0.400 | 0.6 | 0.160 | -0.0003 | 1.00 | -0.0003 | 0.040 | 0.0000 | 0.0 |
| 20 | 13:50 | 5.20 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File InformationFile Name
Start Date and TimeCSC117.WAD
2011/06/28 13:32:10**Site Details**Site Name
Operator(s)CSC117
RB



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

File Name CSC117.WAD
Start Date and Time 2011/06/28 13:32:10

Site Details

Site Name CSC117
Operator(s) RB

Quality Control

| St | Loc | %Dep | Message |
|----|------|------|--|
| 1 | 3.40 | 0.6 | High standard error: 0.036 |
| 3 | 3.50 | 0.6 | High standard error: 0.038 |
| 4 | 3.60 | 0.6 | High standard error: 0.034 |
| 5 | 3.70 | 0.6 | High standard error: 0.045 |
| 6 | 3.80 | 0.6 | High standard error: 0.036 |
| 7 | 3.90 | 0.6 | High standard error: 0.039 |
| 10 | 4.20 | 0.6 | High standard error: 0.030 |
| 13 | 4.50 | 0.6 | High angle: -32 |
| 18 | 5.00 | 0.6 | High standard error: 0.033 |
| 19 | 5.10 | 0.6 | High SNR variation during measurement: 9.9,9.9 |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

| | |
|---------------------|---------------------|
| File Name | CSC118.WAD |
| Start Date and Time | 2011/06/28 12:27:59 |

Site Details

| | |
|-------------|--------|
| Site Name | CSC118 |
| Operator(s) | RB |

System Information

| | |
|----------------------|-------------|
| Sensor Type | FlowTracker |
| Serial # | P3514 |
| CPU Firmware Version | 3.7 |
| Software Ver | 2.20 |

Units (English Units)

| | |
|-----------|------|
| Distance | ft |
| Velocity | ft/s |
| Area | ft^2 |
| Discharge | cfs |

Discharge Uncertainty

| Category | ISO | Stats |
|----------------|-------------|-------------|
| Accuracy | 1.0% | 1.0% |
| Depth | 0.5% | 1.6% |
| Velocity | 2.1% | 8.8% |
| Width | 0.2% | 0.2% |
| Method | 2.6% | - |
| # Stations | 3.0% | - |
| Overall | 4.6% | 9.0% |

Summary

| | | | |
|-----------------|-------------|------------------------|---------------|
| Averaging Int. | 40 | # Stations | 17 |
| Start Edge | REW | Total Width | 2.402 |
| Mean SNR | 42.5 dB | Total Area | 1.183 |
| Mean Temp | 42.76 °F | Mean Depth | 0.493 |
| Disch. Equation | Mid-Section | Mean Velocity | 0.7788 |
| | | Total Discharge | 0.9216 |

Measurement Results

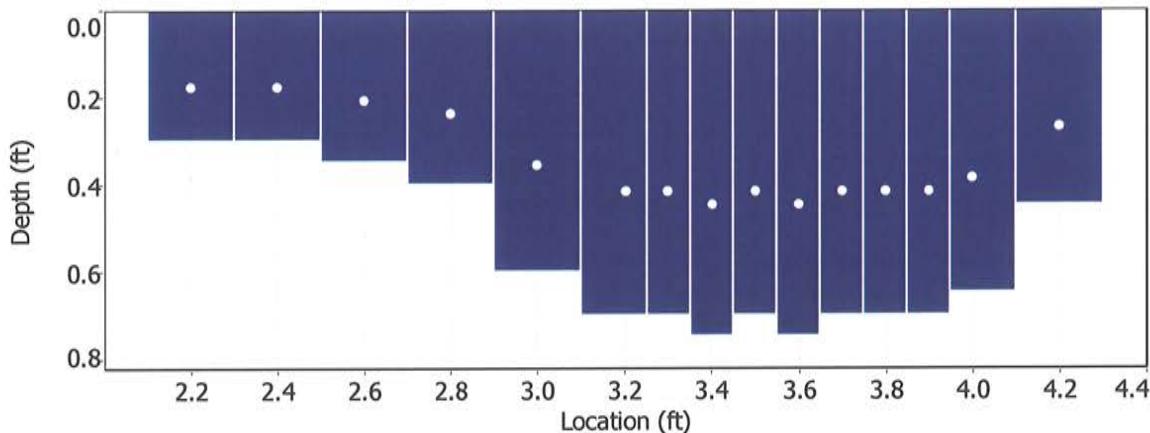
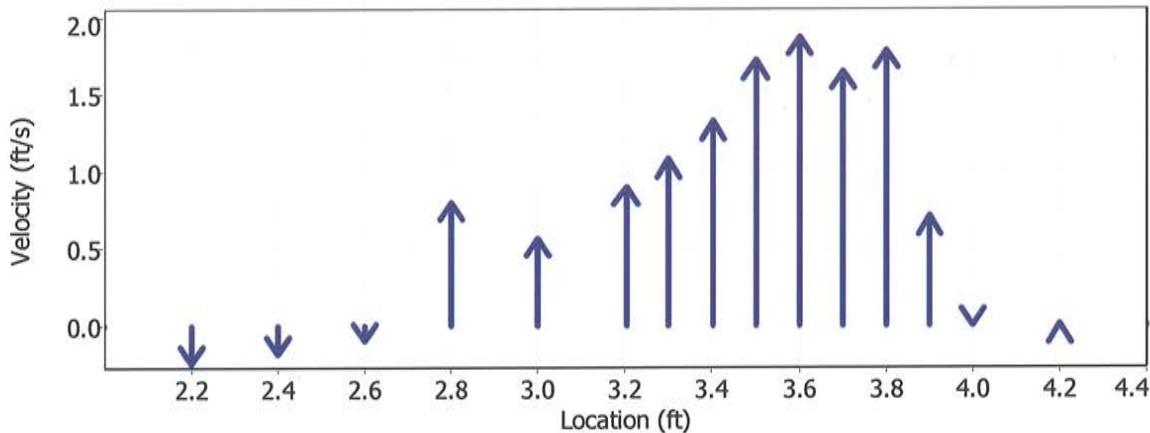
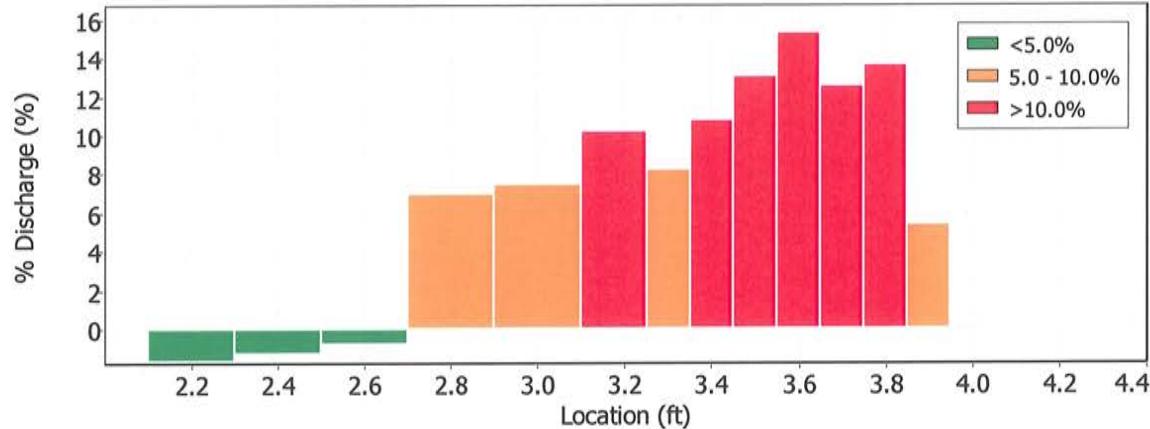
| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
|----|--------------|-------------|------------|--------------|------------|--------------|----------------|-------------|----------------|--------------|----------------|-------------|
| 0 | 12:27 | 2.00 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| 1 | <i>12:27</i> | <i>2.20</i> | <i>0.6</i> | <i>0.300</i> | <i>0.6</i> | <i>0.120</i> | <i>-0.2549</i> | <i>1.00</i> | <i>-0.2549</i> | <i>0.060</i> | <i>-0.0153</i> | <i>-1.7</i> |
| 2 | <i>12:29</i> | <i>2.40</i> | <i>0.6</i> | <i>0.300</i> | <i>0.6</i> | <i>0.120</i> | <i>-0.1939</i> | <i>1.00</i> | <i>-0.1939</i> | <i>0.060</i> | <i>-0.0116</i> | <i>-1.3</i> |
| 3 | <i>12:30</i> | <i>2.60</i> | <i>0.6</i> | <i>0.350</i> | <i>0.6</i> | <i>0.140</i> | <i>-0.1037</i> | <i>1.00</i> | <i>-0.1037</i> | <i>0.070</i> | <i>-0.0073</i> | <i>-0.8</i> |
| 4 | <i>12:31</i> | <i>2.80</i> | <i>0.6</i> | <i>0.400</i> | <i>0.6</i> | <i>0.160</i> | <i>0.8054</i> | <i>1.00</i> | <i>0.8054</i> | <i>0.080</i> | <i>0.0645</i> | <i>7.0</i> |
| 5 | 12:32 | 3.00 | 0.6 | 0.600 | 0.6 | 0.240 | 0.5705 | 1.00 | 0.5705 | 0.120 | 0.0685 | 7.4 |
| 6 | <i>12:33</i> | <i>3.20</i> | <i>0.6</i> | <i>0.700</i> | <i>0.6</i> | <i>0.280</i> | <i>0.9003</i> | <i>1.00</i> | <i>0.9003</i> | <i>0.105</i> | <i>0.0943</i> | <i>10.2</i> |
| 7 | <i>12:40</i> | <i>3.30</i> | <i>0.6</i> | <i>0.700</i> | <i>0.6</i> | <i>0.280</i> | <i>1.0784</i> | <i>1.00</i> | <i>1.0784</i> | <i>0.070</i> | <i>0.0756</i> | <i>8.2</i> |
| 8 | <i>12:34</i> | <i>3.40</i> | <i>0.6</i> | <i>0.750</i> | <i>0.6</i> | <i>0.300</i> | <i>1.3307</i> | <i>1.00</i> | <i>1.3307</i> | <i>0.075</i> | <i>0.0999</i> | <i>10.8</i> |
| 9 | 12:41 | 3.50 | 0.6 | 0.700 | 0.6 | 0.280 | 1.7215 | 1.00 | 1.7215 | 0.070 | 0.1206 | 13.1 |
| 10 | 12:35 | 3.60 | 0.6 | 0.750 | 0.6 | 0.300 | 1.8786 | 1.00 | 1.8786 | 0.075 | 0.1410 | 15.3 |
| 11 | 12:42 | 3.70 | 0.6 | 0.700 | 0.6 | 0.280 | 1.6565 | 1.00 | 1.6565 | 0.070 | 0.1161 | 12.6 |
| 12 | 12:36 | 3.80 | 0.6 | 0.700 | 0.6 | 0.280 | 1.7907 | 1.00 | 1.7907 | 0.070 | 0.1252 | 13.6 |
| 13 | 12:43 | 3.90 | 0.6 | 0.700 | 0.6 | 0.280 | 0.7103 | 1.00 | 0.7103 | 0.070 | 0.0498 | 5.4 |
| 14 | 12:37 | 4.00 | 0.6 | 0.650 | 0.6 | 0.260 | -0.0033 | 1.00 | -0.0033 | 0.098 | -0.0003 | 0.0 |
| 15 | <i>12:38</i> | <i>4.20</i> | <i>0.6</i> | <i>0.450</i> | <i>0.6</i> | <i>0.180</i> | <i>0.0082</i> | <i>1.00</i> | <i>0.0082</i> | <i>0.090</i> | <i>0.0007</i> | <i>0.1</i> |
| 16 | 12:38 | 4.40 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |

Rows in Italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File InformationFile Name
Start Date and TimeCSC118.WAD
2011/06/28 12:27:59**Site Details**Site Name
Operator(s)CSC118
RB



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

| File Information | | | Site Details |
|------------------------|------------|---------------------|---|
| File Name | CSC118.WAD | Start Date and Time | Date Generated: Wed Jan 25 2012 Site Name Operator(s) |
| Quality Control | | | |
| St | Loc | %Dep | Message |
| 1 | 2.20 | 0.6 | High angle: 149 |
| 2 | 2.40 | 0.6 | High angle: 129 |
| 3 | 2.60 | 0.6 | High angle: 113 |
| 4 | 2.80 | 0.6 | High standard error: 0.098 |
| 6 | 3.20 | 0.6 | High angle: -24 |
| | | 0.6 | High standard error: 0.094 |
| 7 | 3.30 | 0.6 | High angle: -29 |
| 8 | 3.40 | 0.6 | High angle: -29 |
| 15 | 4.20 | 0.6 | High differences in beam SNR: 52.8,42.5 |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

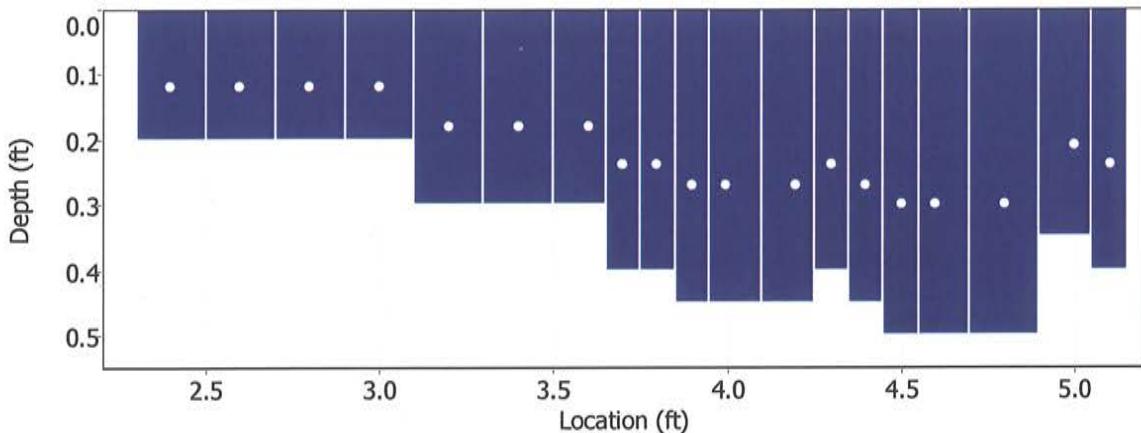
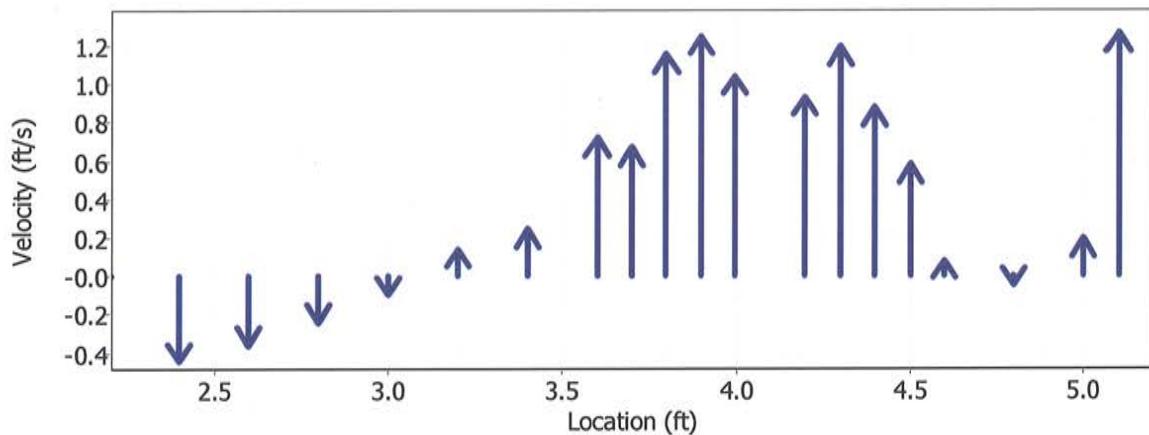
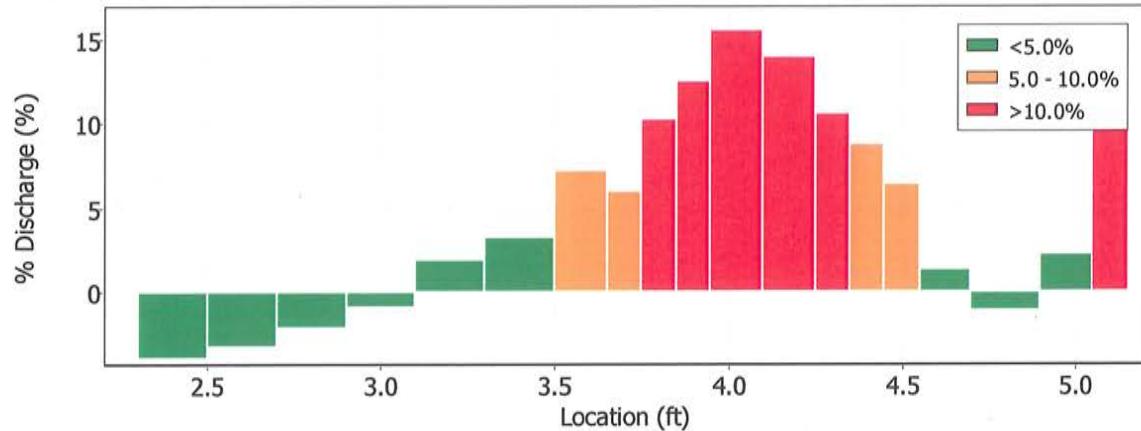
| File Information | | Site Details | | | | | | | | | | |
|------------------------------|---------------------|------------------------|-----------------|--------------|------------|--------------|----------------|-------------|----------------|--------------|----------------|-------------|
| File Name | CSC119.WAD | Site Name | CSC119 | | | | | | | | | |
| Start Date and Time | | | | | | | | | | | | |
| | 2011/06/28 16:35:29 | Operator(s) | RB | | | | | | | | | |
| System Information | | | | | | | | | | | | |
| Sensor Type | FlowTracker | Units | (English Units) | | | | | | | | | |
| Serial # | P3514 | Distance | ft | | | | | | | | | |
| CPU Firmware Version | 3.7 | Velocity | ft/s | | | | | | | | | |
| Software Ver | 2.20 | Area | ft^2 | | | | | | | | | |
| | | Discharge | cfs | | | | | | | | | |
| Summary | | | | | | | | | | | | |
| Averaging Int. | 40 | # Stations | 21 | | | | | | | | | |
| Start Edge | REW | Total Width | 3.003 | | | | | | | | | |
| Mean SNR | 44.6 dB | Total Area | 0.988 | | | | | | | | | |
| Mean Temp | 53.48 °F | Mean Depth | 0.329 | | | | | | | | | |
| Disch. Equation | Mid-Section | Mean Velocity | 0.4585 | | | | | | | | | |
| | | Total Discharge | 0.4530 | | | | | | | | | |
| Discharge Uncertainty | | | | | | | | | | | | |
| Category | ISO | Stats | | | | | | | | | | |
| Accuracy | 1.0% | 1.0% | | | | | | | | | | |
| Depth | 0.5% | 2.9% | | | | | | | | | | |
| Velocity | 2.8% | 9.6% | | | | | | | | | | |
| Width | 0.2% | 0.2% | | | | | | | | | | |
| Method | 2.6% | - | | | | | | | | | | |
| # Stations | 2.4% | - | | | | | | | | | | |
| Overall | 4.6% | 10.1% | | | | | | | | | | |
| Measurement Results | | | | | | | | | | | | |
| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
| 0 | 16:35 | 2.20 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| 1 | <i>16:35</i> | <i>2.40</i> | <i>0.6</i> | <i>0.200</i> | <i>0.6</i> | <i>0.080</i> | <i>-0.4429</i> | <i>1.00</i> | <i>-0.4429</i> | <i>0.040</i> | <i>-0.0177</i> | <i>-3.9</i> |
| 2 | <i>16:36</i> | <i>2.60</i> | <i>0.6</i> | <i>0.200</i> | <i>0.6</i> | <i>0.080</i> | <i>-0.3619</i> | <i>1.00</i> | <i>-0.3619</i> | <i>0.040</i> | <i>-0.0145</i> | <i>-3.2</i> |
| 3 | <i>16:37</i> | <i>2.80</i> | <i>0.6</i> | <i>0.200</i> | <i>0.6</i> | <i>0.080</i> | <i>-0.2448</i> | <i>1.00</i> | <i>-0.2448</i> | <i>0.040</i> | <i>-0.0098</i> | <i>-2.2</i> |
| 4 | <i>16:38</i> | <i>3.00</i> | <i>0.6</i> | <i>0.200</i> | <i>0.6</i> | <i>0.080</i> | <i>-0.0974</i> | <i>1.00</i> | <i>-0.0974</i> | <i>0.040</i> | <i>-0.0039</i> | <i>-0.9</i> |
| 5 | <i>16:39</i> | <i>3.20</i> | <i>0.6</i> | <i>0.300</i> | <i>0.6</i> | <i>0.120</i> | <i>0.1444</i> | <i>1.00</i> | <i>0.1444</i> | <i>0.060</i> | <i>0.0086</i> | <i>1.9</i> |
| 6 | <i>16:40</i> | <i>3.40</i> | <i>0.6</i> | <i>0.300</i> | <i>0.6</i> | <i>0.120</i> | <i>0.2467</i> | <i>1.00</i> | <i>0.2467</i> | <i>0.060</i> | <i>0.0148</i> | <i>3.3</i> |
| 7 | <i>16:41</i> | <i>3.60</i> | <i>0.6</i> | <i>0.300</i> | <i>0.6</i> | <i>0.120</i> | <i>0.7201</i> | <i>1.00</i> | <i>0.7201</i> | <i>0.045</i> | <i>0.0325</i> | <i>7.2</i> |
| 8 | <i>16:49</i> | <i>3.70</i> | <i>0.6</i> | <i>0.400</i> | <i>0.6</i> | <i>0.160</i> | <i>0.6732</i> | <i>1.00</i> | <i>0.6732</i> | <i>0.040</i> | <i>0.0269</i> | <i>5.9</i> |
| 9 | <i>16:42</i> | <i>3.80</i> | <i>0.6</i> | <i>0.400</i> | <i>0.6</i> | <i>0.160</i> | <i>1.1545</i> | <i>1.00</i> | <i>1.1545</i> | <i>0.040</i> | <i>0.0461</i> | <i>10.2</i> |
| 10 | <i>16:50</i> | <i>3.90</i> | <i>0.6</i> | <i>0.450</i> | <i>0.6</i> | <i>0.180</i> | <i>1.2520</i> | <i>1.00</i> | <i>1.2520</i> | <i>0.045</i> | <i>0.0563</i> | <i>12.4</i> |
| 11 | <i>16:42</i> | <i>4.00</i> | <i>0.6</i> | <i>0.450</i> | <i>0.6</i> | <i>0.180</i> | <i>1.0446</i> | <i>1.00</i> | <i>1.0446</i> | <i>0.067</i> | <i>0.0701</i> | <i>15.5</i> |
| 12 | <i>16:43</i> | <i>4.20</i> | <i>0.6</i> | <i>0.450</i> | <i>0.6</i> | <i>0.180</i> | <i>0.9327</i> | <i>1.00</i> | <i>0.9327</i> | <i>0.068</i> | <i>0.0633</i> | <i>14.0</i> |
| 13 | <i>16:53</i> | <i>4.30</i> | <i>0.6</i> | <i>0.400</i> | <i>0.6</i> | <i>0.160</i> | <i>1.1932</i> | <i>1.00</i> | <i>1.1932</i> | <i>0.040</i> | <i>0.0477</i> | <i>10.5</i> |
| 14 | <i>16:44</i> | <i>4.40</i> | <i>0.6</i> | <i>0.450</i> | <i>0.6</i> | <i>0.180</i> | <i>0.8809</i> | <i>1.00</i> | <i>0.8809</i> | <i>0.045</i> | <i>0.0397</i> | <i>8.8</i> |
| 15 | <i>16:54</i> | <i>4.50</i> | <i>0.6</i> | <i>0.500</i> | <i>0.6</i> | <i>0.200</i> | <i>0.5810</i> | <i>1.00</i> | <i>0.5810</i> | <i>0.050</i> | <i>0.0290</i> | <i>6.4</i> |
| 16 | <i>16:45</i> | <i>4.60</i> | <i>0.6</i> | <i>0.500</i> | <i>0.6</i> | <i>0.200</i> | <i>0.0860</i> | <i>1.00</i> | <i>0.0860</i> | <i>0.074</i> | <i>0.0064</i> | <i>1.4</i> |
| 17 | <i>16:47</i> | <i>4.80</i> | <i>0.6</i> | <i>0.500</i> | <i>0.6</i> | <i>0.200</i> | <i>-0.0502</i> | <i>1.00</i> | <i>-0.0502</i> | <i>0.100</i> | <i>-0.0050</i> | <i>-1.1</i> |
| 18 | <i>16:48</i> | <i>5.00</i> | <i>0.6</i> | <i>0.350</i> | <i>0.6</i> | <i>0.140</i> | <i>0.1985</i> | <i>1.00</i> | <i>0.1985</i> | <i>0.053</i> | <i>0.0105</i> | <i>2.3</i> |
| 19 | <i>16:51</i> | <i>5.10</i> | <i>0.6</i> | <i>0.400</i> | <i>0.6</i> | <i>0.160</i> | <i>1.2644</i> | <i>1.00</i> | <i>1.2644</i> | <i>0.041</i> | <i>0.0519</i> | <i>11.5</i> |
| 20 | <i>16:51</i> | <i>5.20</i> | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File InformationFile Name
Start Date and TimeCSC119.WAD
2011/06/28 16:35:29**Site Details**Site Name
Operator(s)CSC119
RB



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

File Name CSC119.WAD
Start Date and Time 2011/06/28 16:35:29

Site Details

Site Name CSC119
Operator(s) RB

Quality Control

| St | Loc | %Dep | Message |
|----|------|------|----------------------------|
| 1 | 2.40 | 0.6 | High angle: -158 |
| 2 | 2.60 | 0.6 | High angle: -164 |
| 3 | 2.80 | 0.6 | High angle: -164 |
| 4 | 3.00 | 0.6 | High angle: -133 |
| 5 | 3.20 | 0.6 | High angle: -30 |
| 6 | 3.40 | 0.6 | High number of spikes: 5 |
| 7 | 3.60 | 0.6 | High number of spikes: 5 |
| 10 | 3.90 | 0.6 | High standard error: 0.085 |
| 14 | 4.40 | 0.6 | High standard error: 0.110 |
| 16 | 4.60 | 0.6 | High angle: -41 |
| 17 | 4.80 | 0.6 | High angle: -127 |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

File Name CSC120A.WAD
 Start Date and Time 2011/06/28 15:59:57

Site Details

Site Name CSC120A
 Operator(s) RB

System Information

Sensor Type FlowTracker
 Serial # P3514
 CPU Firmware Version 3.7
 Software Ver 2.20

Units

(English Units)
 Distance ft
 Velocity ft/s
 Area ft²
 Discharge cfs

Discharge Uncertainty

| Category | ISO | Stats |
|----------------|-------------|-------------|
| Accuracy | 1.0% | 1.0% |
| Depth | 0.2% | 1.3% |
| Velocity | 1.1% | 9.8% |
| Width | 0.1% | 0.1% |
| Method | 1.9% | - |
| # Stations | 2.3% | - |
| Overall | 3.4% | 9.9% |

Summary

| | | | |
|-----------------|-------------|------------------------|----------------|
| Averaging Int. | 40 | # Stations | 22 |
| Start Edge | LEW | Total Width | 11.401 |
| Mean SNR | 46.2 dB | Total Area | 11.011 |
| Mean Temp | 43.93 °F | Mean Depth | 0.966 |
| Disch. Equation | Mid-Section | Mean Velocity | 2.7079 |
| | | Total Discharge | 29.8181 |

Measurement Results

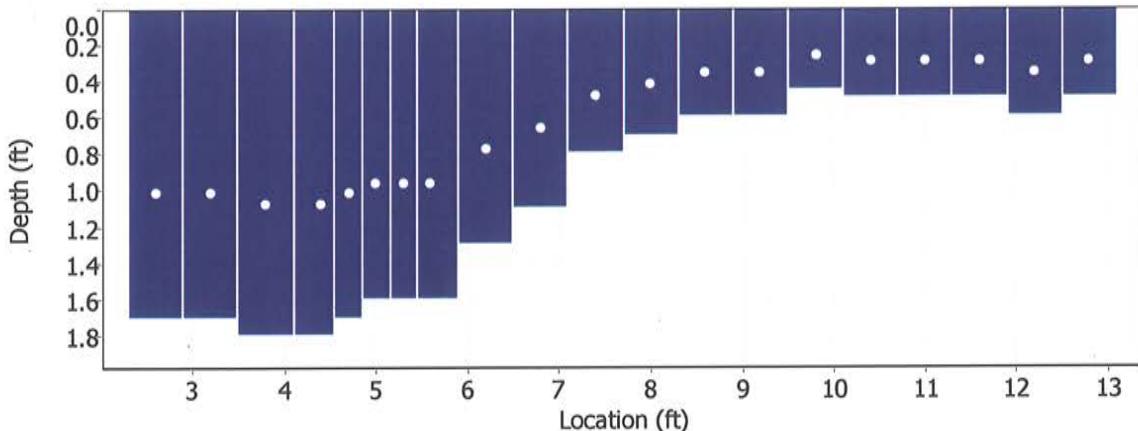
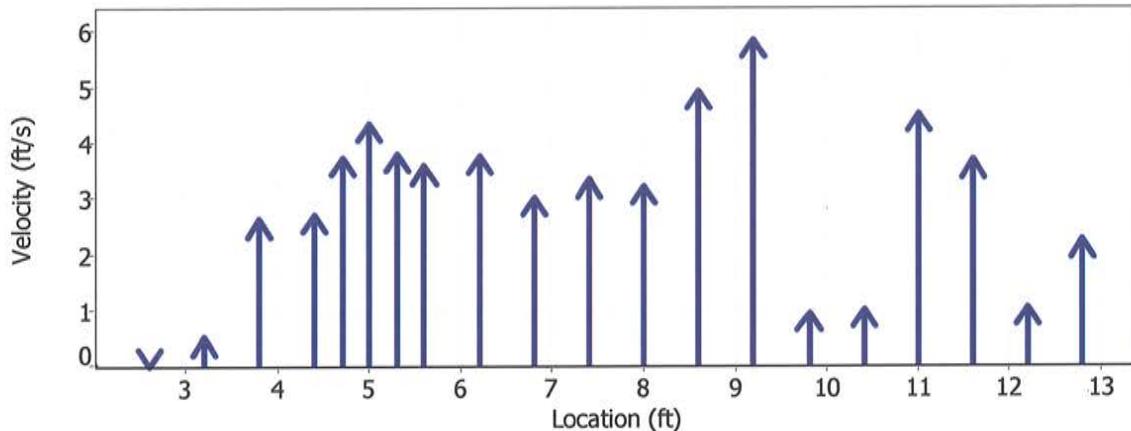
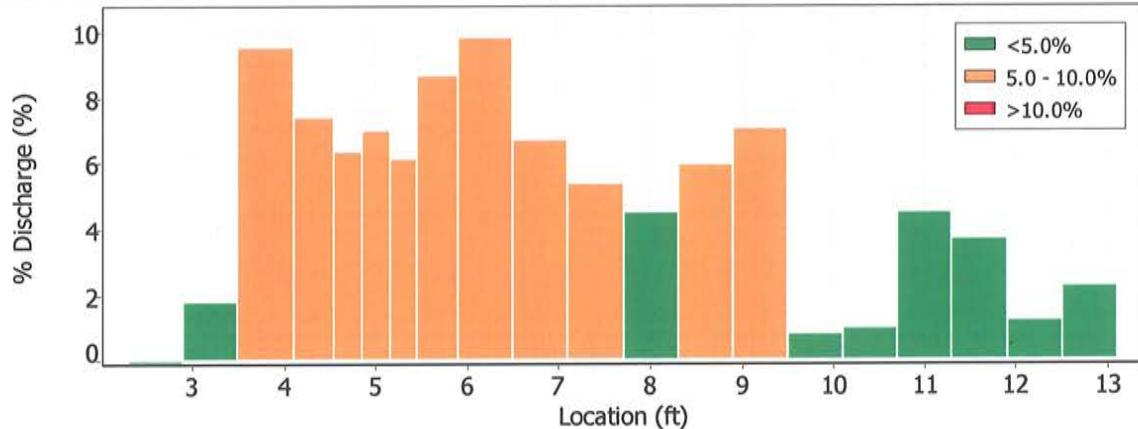
| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
|----|--------------|--------------|------------|--------------|------------|--------------|----------------|-------------|----------------|--------------|----------------|-------------|
| 0 | 15:59 | 2.00 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| 1 | <i>16:01</i> | <i>2.60</i> | <i>0.6</i> | <i>1.700</i> | <i>0.6</i> | <i>0.680</i> | <i>-0.0318</i> | <i>1.00</i> | <i>-0.0318</i> | <i>1.020</i> | <i>-0.0325</i> | <i>-0.1</i> |
| 2 | <i>16:02</i> | <i>3.20</i> | <i>0.6</i> | <i>1.700</i> | <i>0.6</i> | <i>0.680</i> | <i>0.5269</i> | <i>1.00</i> | <i>0.5269</i> | <i>1.020</i> | <i>0.5375</i> | <i>1.8</i> |
| 3 | 16:03 | 3.80 | 0.6 | 1.800 | 0.6 | 0.720 | 2.6316 | 1.00 | 2.6316 | 1.080 | 2.8422 | 9.5 |
| 4 | 16:04 | 4.40 | 0.6 | 1.800 | 0.6 | 0.720 | 2.7188 | 1.00 | 2.7188 | 0.810 | 2.2019 | 7.4 |
| 5 | 16:24 | 4.70 | 0.6 | 1.700 | 0.6 | 0.680 | 3.7352 | 1.00 | 3.7352 | 0.510 | 1.9053 | 6.4 |
| 6 | 16:06 | 5.00 | 0.6 | 1.600 | 0.6 | 0.640 | 4.3583 | 1.00 | 4.3583 | 0.480 | 2.0911 | 7.0 |
| 7 | 16:22 | 5.30 | 0.6 | 1.600 | 0.6 | 0.640 | 3.8104 | 1.00 | 3.8104 | 0.480 | 1.8293 | 6.1 |
| 8 | 16:07 | 5.60 | 0.6 | 1.600 | 0.6 | 0.640 | 3.5843 | 1.00 | 3.5843 | 0.721 | 2.5825 | 8.7 |
| 9 | 16:08 | 6.20 | 0.6 | 1.300 | 0.6 | 0.520 | 3.7697 | 1.00 | 3.7697 | 0.780 | 2.9404 | 9.9 |
| 10 | 16:09 | 6.80 | 0.6 | 1.100 | 0.6 | 0.440 | 3.0259 | 1.00 | 3.0259 | 0.660 | 1.9974 | 6.7 |
| 11 | 16:10 | 7.40 | 0.6 | 0.800 | 0.6 | 0.320 | 3.3507 | 1.00 | 3.3507 | 0.480 | 1.6083 | 5.4 |
| 12 | 16:11 | 8.00 | 0.6 | 0.700 | 0.6 | 0.280 | 3.2257 | 1.00 | 3.2257 | 0.420 | 1.3552 | 4.5 |
| 13 | 16:12 | 8.60 | 0.6 | 0.600 | 0.6 | 0.240 | 4.9272 | 1.00 | 4.9272 | 0.360 | 1.7742 | 5.9 |
| 14 | 16:14 | 9.20 | 0.6 | 0.600 | 0.6 | 0.240 | 5.8537 | 1.00 | 5.8537 | 0.360 | 2.1078 | 7.1 |
| 15 | <i>16:15</i> | <i>9.80</i> | <i>0.6</i> | <i>0.450</i> | <i>0.6</i> | <i>0.180</i> | <i>0.9380</i> | <i>1.00</i> | <i>0.9380</i> | <i>0.270</i> | <i>0.2534</i> | <i>0.8</i> |
| 16 | <i>16:16</i> | <i>10.40</i> | <i>0.6</i> | <i>0.500</i> | <i>0.6</i> | <i>0.200</i> | <i>1.0121</i> | <i>1.00</i> | <i>1.0121</i> | <i>0.300</i> | <i>0.3037</i> | <i>1.0</i> |
| 17 | 16:17 | 11.00 | 0.6 | 0.500 | 0.6 | 0.200 | 4.5266 | 1.00 | 4.5266 | 0.300 | 1.3581 | 4.6 |
| 18 | 16:18 | 11.60 | 0.6 | 0.500 | 0.6 | 0.200 | 3.6942 | 1.00 | 3.6942 | 0.300 | 1.1084 | 3.7 |
| 19 | 16:19 | 12.20 | 0.6 | 0.600 | 0.6 | 0.240 | 1.0417 | 1.00 | 1.0417 | 0.360 | 0.3751 | 1.3 |
| 20 | <i>16:20</i> | <i>12.80</i> | <i>0.6</i> | <i>0.500</i> | <i>0.6</i> | <i>0.200</i> | <i>2.2625</i> | <i>1.00</i> | <i>2.2625</i> | <i>0.300</i> | <i>0.6788</i> | <i>2.3</i> |
| 21 | 16:20 | 13.40 | None | 0.000 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0000 | 0.0 |

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File InformationFile Name
Start Date and TimeCSC120A.WAD
2011/06/28 15:59:57**Site Details**Site Name
Operator(s)CSC120A
RB



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

File Name CSC120A.WAD
Start Date and Time 2011/06/28 15:59:57

Site Details

Site Name CSC120A
Operator(s) RB

Quality Control

| St | Loc | %Dep | Message |
|----|-------|------|----------------------------|
| 1 | 2.60 | 0.6 | High angle: -111 |
| 2 | 3.20 | 0.6 | High angle: -23 |
| 15 | 9.80 | 0.6 | High standard error: 0.296 |
| 16 | 10.40 | 0.6 | High standard error: 0.229 |
| 20 | 12.80 | 0.6 | High standard error: 0.219 |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

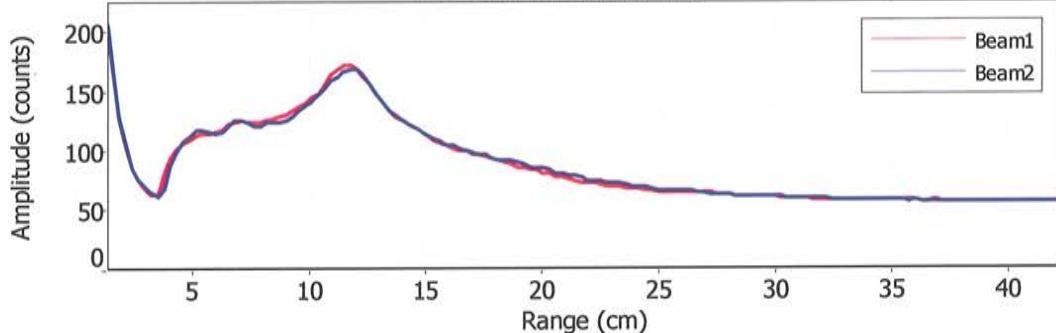
File Name CSC120A.WAD
Start Date and Time 2011/06/28 15:59:57

Site Details

Site Name CSC120A
Operator(s) RB

Automatic Quality Control Test (BeamCheck)

Tue Jun 28 15:58:40 MDT 2011



- Noise level check - Pass
- SNR check - Pass
- Peak location check - Pass
- Peak shape check - Pass



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

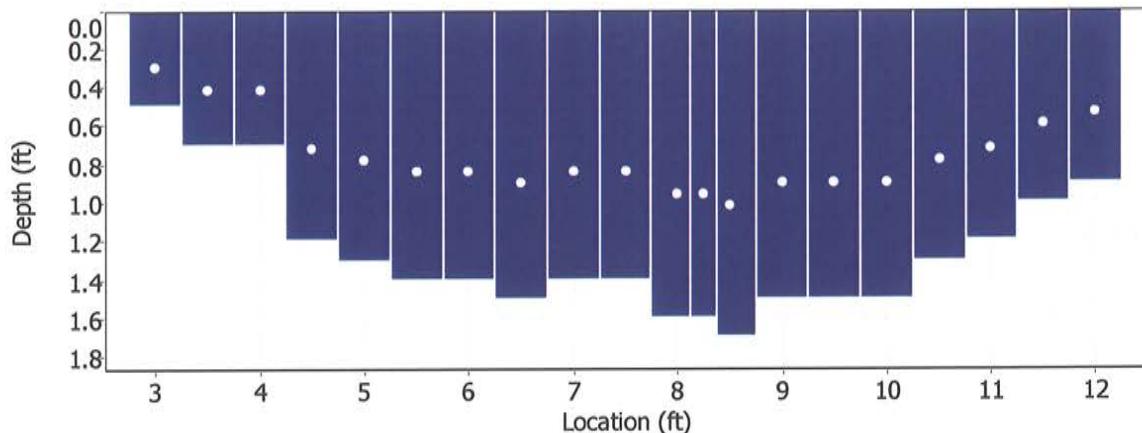
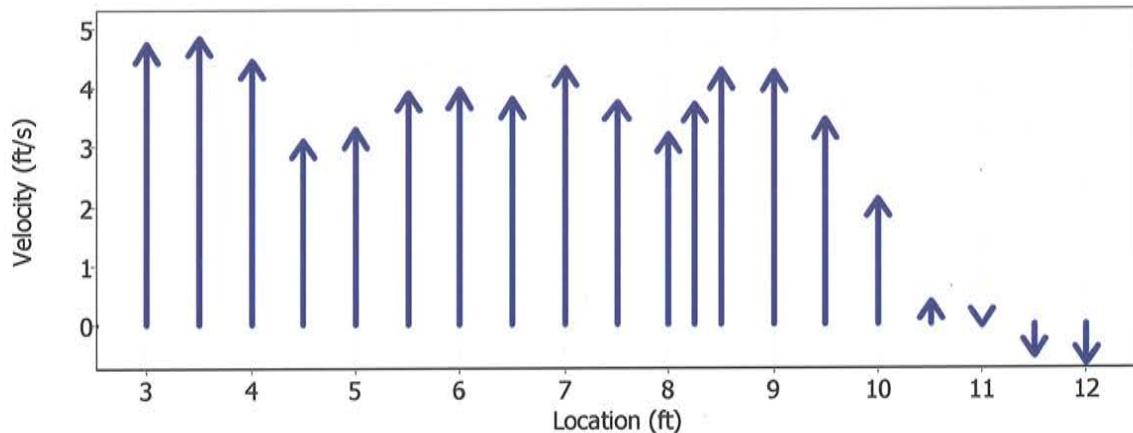
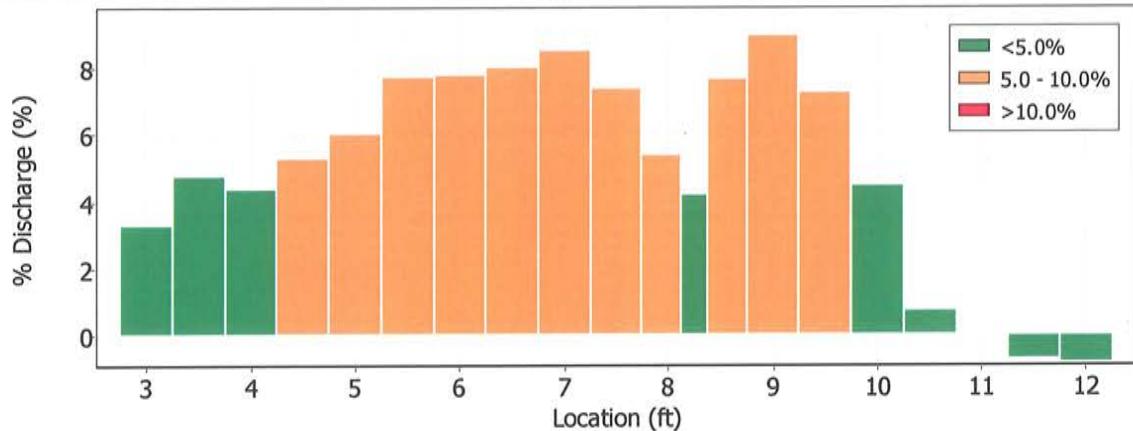
| File Information | | | | Site Details | | | | | | | | | |
|----------------------------|---------------------|-------|--------|------------------------------|--|-------|---------|------------------------------|---------|-------|---------|------|--|
| File Name | OPP01.WAD | | | Site Name | OPP01 <th data-kind="ghost"></th> <th data-kind="ghost"></th> <th data-cs="4" data-kind="parent"></th> <th data-kind="ghost"></th> <th data-kind="ghost"></th> <th data-kind="ghost"></th> | | | | | | | | |
| Start Date and Time | 2011/06/29 12:01:54 | | | Operator(s) | RB | | | | | | | | |
| System Information | | | | Units (English Units) | | | | Discharge Uncertainty | | | | | |
| Sensor Type | FlowTracker | | | Distance | ft | | | Category | ISO | Stats | | | |
| Serial # | P3514 | | | Velocity | ft/s | | | Accuracy | 1.0% | 1.0% | | | |
| CPU Firmware Version | 3.7 | | | Area | ft^2 | | | Depth | 0.2% | 1.8% | | | |
| Software Ver | 2.20 | | | Discharge | cfs | | | Velocity | 1.1% | 2.4% | | | |
| Summary | | | | | | | | Width | 0.1% | 0.1% | | | |
| Averaging Int. | 40 | | | # Stations | 22 | | | Method | 2.0% | - | | | |
| Start Edge | REW | | | Total Width | 10.000 | | | # Stations | 2.3% | - | | | |
| Mean SNR | 42.9 dB | | | Total Area | 11.838 | | | Overall | 3.4% | 3.1% | | | |
| Mean Temp | 45.83 °F | | | Mean Depth | 1.184 | | | | | | | | |
| Disch. Equation | Mid-Section | | | Mean Velocity | 3.0121 | | | | | | | | |
| | | | | | Total Discharge | | | | 35.6564 | | | | |
| Measurement Results | | | | | | | | | | | | | |
| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q | |
| 0 | 12:01 | 2.50 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 | |
| 1 | 12:01 | 3.00 | 0.6 | 0.500 | 0.6 | 0.200 | 4.7205 | 1.00 | 4.7205 | 0.250 | 1.1801 | 3.3 | |
| 2 | 12:02 | 3.50 | 0.6 | 0.700 | 0.6 | 0.280 | 4.8379 | 1.00 | 4.8379 | 0.350 | 1.6936 | 4.7 | |
| 3 | 12:03 | 4.00 | 0.6 | 0.700 | 0.6 | 0.280 | 4.4560 | 1.00 | 4.4560 | 0.350 | 1.5599 | 4.4 | |
| 4 | 12:05 | 4.50 | 0.6 | 1.200 | 0.6 | 0.480 | 3.1217 | 1.00 | 3.1217 | 0.600 | 1.8732 | 5.3 | |
| 5 | 12:07 | 5.00 | 0.6 | 1.300 | 0.6 | 0.520 | 3.2953 | 1.00 | 3.2953 | 0.650 | 2.1417 | 6.0 | |
| 6 | 12:08 | 5.50 | 0.6 | 1.400 | 0.6 | 0.560 | 3.9180 | 1.00 | 3.9180 | 0.700 | 2.7425 | 7.7 | |
| 7 | 12:09 | 6.00 | 0.6 | 1.400 | 0.6 | 0.560 | 3.9547 | 1.00 | 3.9547 | 0.700 | 2.7682 | 7.8 | |
| 8 | 12:10 | 6.50 | 0.6 | 1.500 | 0.6 | 0.600 | 3.8064 | 1.00 | 3.8064 | 0.750 | 2.8548 | 8.0 | |
| 9 | 12:12 | 7.00 | 0.6 | 1.400 | 0.6 | 0.560 | 4.3278 | 1.00 | 4.3278 | 0.700 | 3.0293 | 8.5 | |
| 10 | 12:13 | 7.50 | 0.6 | 1.400 | 0.6 | 0.560 | 3.7556 | 1.00 | 3.7556 | 0.700 | 2.6288 | 7.4 | |
| 11 | 12:14 | 8.00 | 0.6 | 1.600 | 0.6 | 0.640 | 3.2044 | 1.00 | 3.2044 | 0.600 | 1.9227 | 5.4 | |
| 12 | 12:24 | 8.25 | 0.6 | 1.600 | 0.6 | 0.640 | 3.7228 | 1.00 | 3.7228 | 0.400 | 1.4892 | 4.2 | |
| 13 | 12:15 | 8.50 | 0.6 | 1.700 | 0.6 | 0.680 | 4.2848 | 1.00 | 4.2848 | 0.638 | 2.7318 | 7.7 | |
| 14 | 12:16 | 9.00 | 0.6 | 1.500 | 0.6 | 0.600 | 4.2513 | 1.00 | 4.2513 | 0.750 | 3.1885 | 8.9 | |
| 15 | 12:17 | 9.50 | 0.6 | 1.500 | 0.6 | 0.600 | 3.4429 | 1.00 | 3.4429 | 0.750 | 2.5822 | 7.2 | |
| 16 | 12:18 | 10.00 | 0.6 | 1.500 | 0.6 | 0.600 | 2.1230 | 1.00 | 2.1230 | 0.750 | 1.5923 | 4.5 | |
| 17 | 12:19 | 10.50 | 0.6 | 1.300 | 0.6 | 0.520 | 0.4045 | 1.00 | 0.4045 | 0.650 | 0.2629 | 0.7 | |
| 18 | 12:20 | 11.00 | 0.6 | 1.200 | 0.6 | 0.480 | -0.0282 | 1.00 | -0.0282 | 0.600 | -0.0169 | 0.0 | |
| 19 | 12:21 | 11.50 | 0.6 | 1.000 | 0.6 | 0.400 | -0.5344 | 1.00 | -0.5344 | 0.500 | -0.2672 | -0.7 | |
| 20 | 12:22 | 12.00 | 0.6 | 0.900 | 0.6 | 0.360 | -0.6690 | 1.00 | -0.6690 | 0.450 | -0.3010 | -0.8 | |
| 21 | 12:22 | 12.50 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 | |

Rows in Italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File InformationFile Name
Start Date and TimeOPP01.WAD
2011/06/29 12:01:54**Site Details**Site Name
Operator(s)OPP01
RB



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

File Name OPP01.WAD
Start Date and Time 2011/06/29 12:01:54

Site Details

Site Name OPP01
Operator(s) RB

Quality Control

| St | Loc | %Dep | Message |
|----|-------|------|----------------------------|
| 4 | 4.50 | 0.6 | High standard error: 0.246 |
| 5 | 5.00 | 0.6 | High standard error: 0.246 |
| 6 | 5.50 | 0.6 | High standard error: 0.198 |
| 18 | 11.00 | 0.6 | High angle: -104 |
| 19 | 11.50 | 0.6 | High angle: -152 |
| 20 | 12.00 | 0.6 | High angle: -159 |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

| File Information | | Site Details | | | | | | | | | | |
|----------------------|---------------------|-----------------------|-----------------|-------|------|-------|--------|----------|--------|-------|--------|-----|
| File Name | OPP02.WAD | Site Name | OPP02 | | | | | | | | | |
| Start Date and Time | 2011/06/29 12:45:45 | Operator(s) | RB | | | | | | | | | |
| System Information | | Units | (English Units) | | | | | | | | | |
| Sensor Type | FlowTracker | Distance | ft | | | | | | | | | |
| Serial # | P3514 | Velocity | ft/s | | | | | | | | | |
| CPU Firmware Version | 3.7 | Area | ft^2 | | | | | | | | | |
| Software Ver | 2.20 | Discharge | cfs | | | | | | | | | |
| Summary | | Discharge Uncertainty | | | | | | | | | | |
| Averaging Int. | 40 | # Stations | 21 | | | | | | | | | |
| Start Edge | REW | Total Width | 14.003 | | | | | | | | | |
| Mean SNR | 45.3 dB | Total Area | 12.183 | | | | | | | | | |
| Mean Temp | 45.51 °F | Mean Depth | 0.870 | | | | | | | | | |
| Disch. Equation | Mid-Section | Mean Velocity | 3.4088 | | | | | | | | | |
| | | Total Discharge | 41.5284 | | | | | | | | | |
| Measurement Results | | | | | | | | | | | | |
| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
| 0 | 12:45 | 4.00 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| 1 | 12:45 | 4.70 | 0.6 | 0.700 | 0.6 | 0.280 | 2.4554 | 1.00 | 2.4554 | 0.490 | 1.2036 | 2.9 |
| 2 | 12:46 | 5.40 | 0.6 | 0.600 | 0.6 | 0.240 | 2.7644 | 1.00 | 2.7644 | 0.420 | 1.1614 | 2.8 |
| 3 | 12:47 | 6.10 | 0.6 | 0.700 | 0.6 | 0.280 | 2.0971 | 1.00 | 2.0971 | 0.490 | 1.0280 | 2.5 |
| 4 | 12:49 | 6.80 | 0.6 | 0.800 | 0.6 | 0.320 | 1.1401 | 1.00 | 1.1401 | 0.560 | 0.6385 | 1.5 |
| 5 | 12:50 | 7.50 | 0.6 | 1.000 | 0.6 | 0.400 | 2.9898 | 1.00 | 2.9898 | 0.700 | 2.0933 | 5.0 |
| 6 | 12:51 | 8.20 | 0.6 | 1.100 | 0.6 | 0.440 | 4.0456 | 1.00 | 4.0456 | 0.770 | 3.1159 | 7.5 |
| 7 | 12:52 | 8.90 | 0.6 | 1.100 | 0.6 | 0.440 | 4.2818 | 1.00 | 4.2818 | 0.770 | 3.2978 | 7.9 |
| 8 | 12:54 | 9.60 | 0.6 | 0.900 | 0.6 | 0.360 | 3.9465 | 1.00 | 3.9465 | 0.630 | 2.4866 | 6.0 |
| 9 | 12:55 | 10.30 | 0.6 | 1.100 | 0.6 | 0.440 | 3.5161 | 1.00 | 3.5161 | 0.770 | 2.7080 | 6.5 |
| 10 | 12:56 | 11.00 | 0.6 | 1.100 | 0.6 | 0.440 | 5.0656 | 1.00 | 5.0656 | 0.770 | 3.9015 | 9.4 |
| 11 | 12:57 | 11.70 | 0.6 | 0.800 | 0.6 | 0.320 | 5.5814 | 1.00 | 5.5814 | 0.560 | 3.1256 | 7.5 |
| 12 | 12:58 | 12.40 | 0.6 | 0.900 | 0.6 | 0.360 | 4.7359 | 1.00 | 4.7359 | 0.630 | 2.9840 | 7.2 |
| 13 | 12:59 | 13.10 | 0.6 | 1.100 | 0.6 | 0.440 | 4.9337 | 1.00 | 4.9337 | 0.770 | 3.7999 | 9.2 |
| 14 | 13:00 | 13.80 | 0.6 | 1.100 | 0.6 | 0.440 | 4.5059 | 1.00 | 4.5059 | 0.770 | 3.4704 | 8.4 |
| 15 | 13:01 | 14.50 | 0.6 | 1.200 | 0.6 | 0.480 | 3.6949 | 1.00 | 3.6949 | 0.840 | 3.1046 | 7.5 |
| 16 | 13:02 | 15.20 | 0.6 | 1.000 | 0.6 | 0.400 | 2.4229 | 1.00 | 2.4229 | 0.700 | 1.6963 | 4.1 |
| 17 | 13:03 | 15.90 | 0.6 | 1.000 | 0.6 | 0.400 | 1.5653 | 1.00 | 1.5653 | 0.700 | 1.0959 | 2.6 |
| 18 | 13:05 | 16.60 | 0.6 | 0.600 | 0.6 | 0.240 | 0.8002 | 1.00 | 0.8002 | 0.420 | 0.3362 | 0.8 |
| 19 | 13:06 | 17.30 | 0.6 | 0.600 | 0.6 | 0.240 | 0.6686 | 1.00 | 0.6686 | 0.420 | 0.2809 | 0.7 |
| 20 | 13:06 | 18.00 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

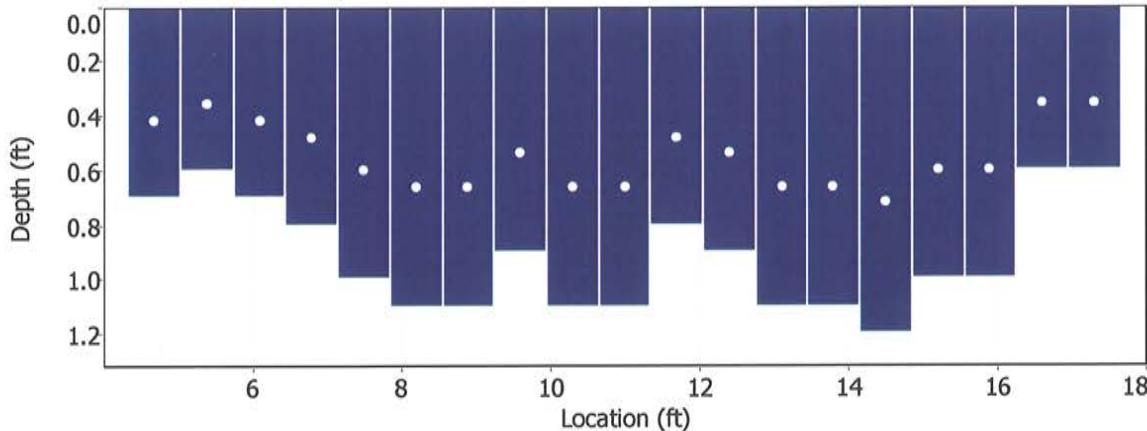
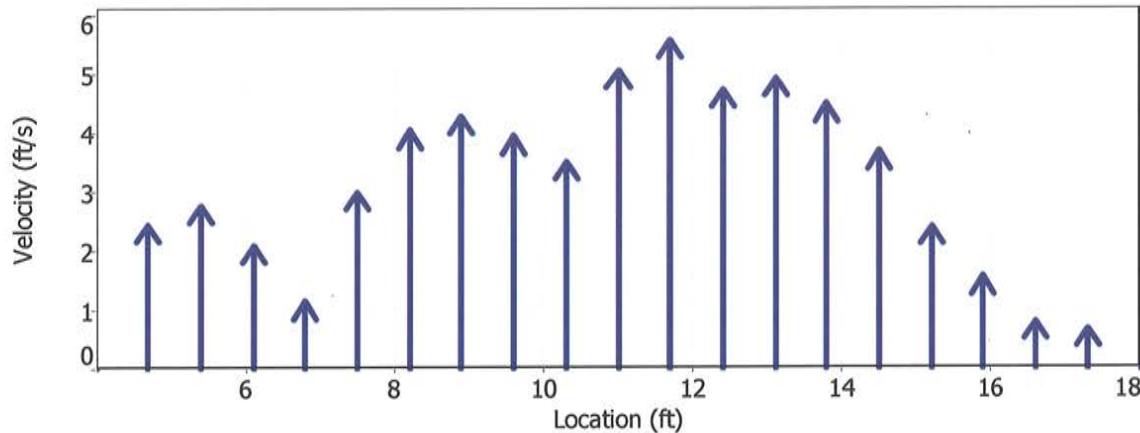
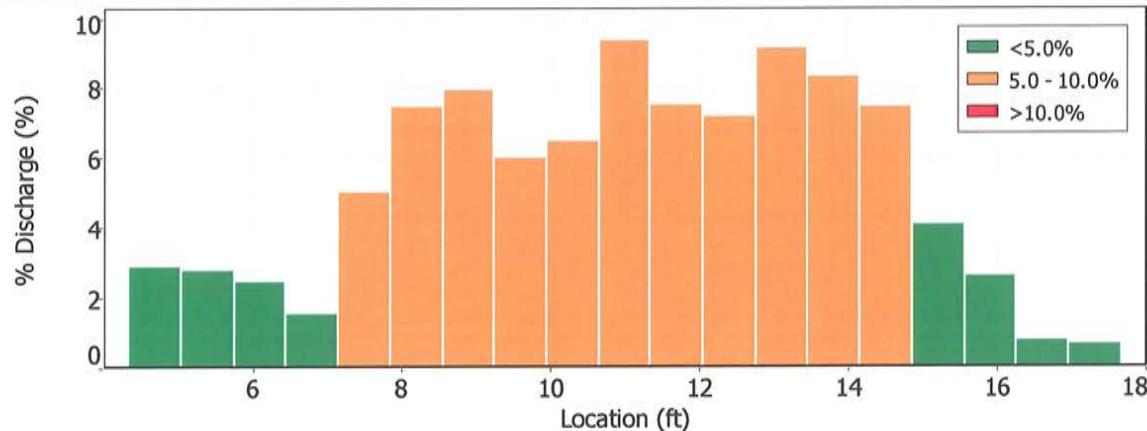
File Name
Start Date and Time

OPP02.WAD
2011/06/29 12:45:45

Site Details

Site Name
Operator(s)

OPP02
RB





Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

| File Information | | | Site Details | |
|---------------------|---------------------|------|----------------------------|-------|
| File Name | OPP02.WAD | | Site Name | OPP02 |
| Start Date and Time | 2011/06/29 12:45:45 | | Operator(s) | RB |
| Quality Control | | | | |
| St | Loc | %Dep | Message | |
| 9 | 10.30 | 0.6 | High standard error: 0.190 | |
| 16 | 15.20 | 0.6 | High standard error: 0.259 | |
| 17 | 15.90 | 0.6 | High angle: -39 | |
| 18 | 16.60 | 0.6 | High angle: -45 | |
| 19 | 17.30 | 0.6 | High angle: -61 | |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

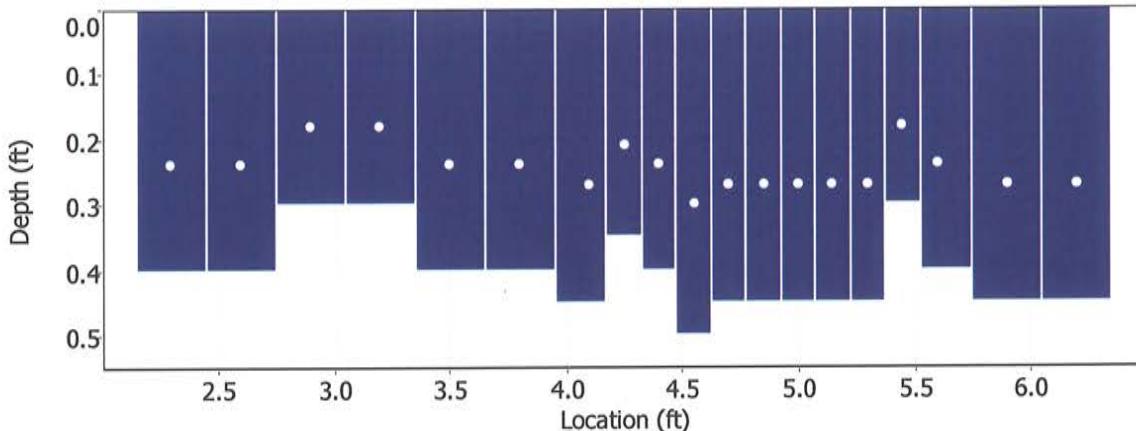
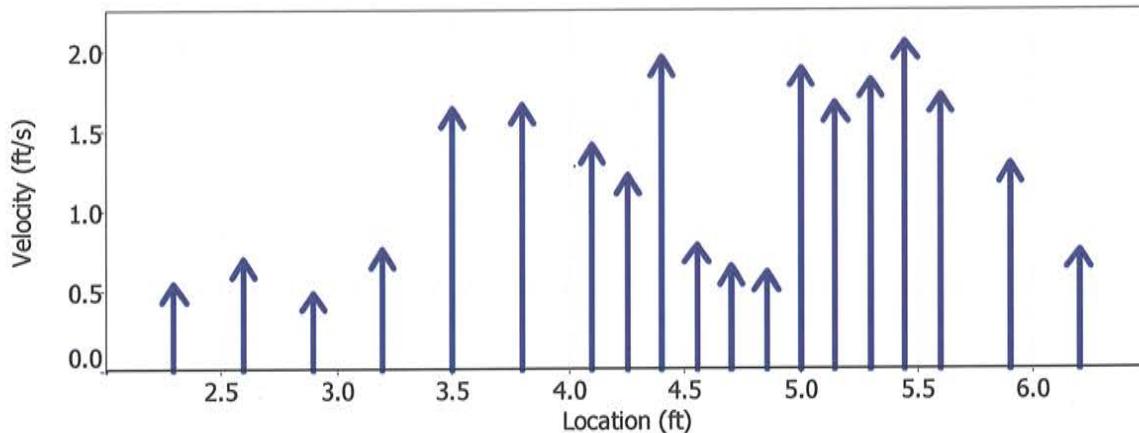
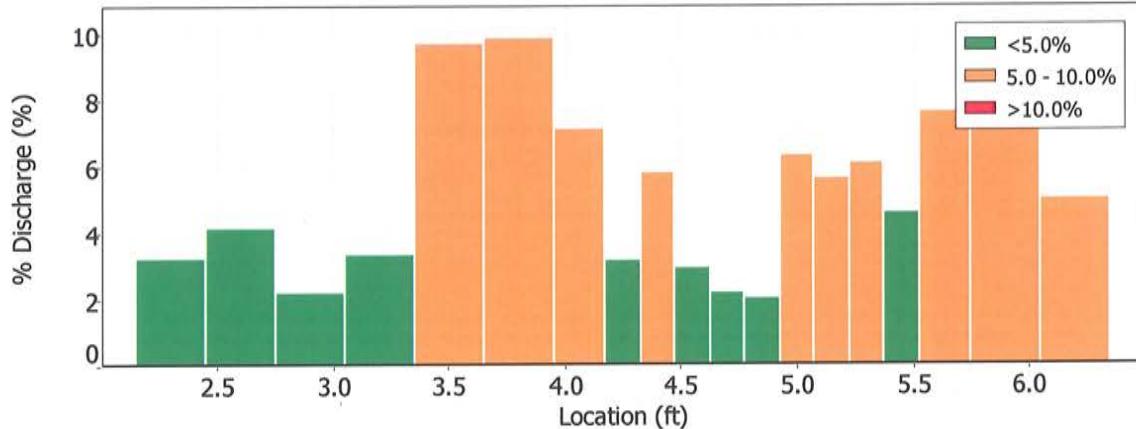
| File Information | | Site Details | | | | | | | | | | |
|----------------------|--|-----------------------|---------------|-------|------|-------|--------|----------|--------|-------|--------|-----|
| File Name | RB1.WAD | Site Name | RB1 | | | | | | | | | |
| Start Date and Time | 2011/06/30 08:23:36 <th>Operator(s)</th> <td>RB</td> | Operator(s) | RB | | | | | | | | | |
| System Information | | Units (English Units) | | | | | | | | | | |
| Sensor Type | FlowTracker | Distance | ft | | | | | | | | | |
| Serial # | P3514 | Velocity | ft/s | | | | | | | | | |
| CPU Firmware Version | 3.7 | Area | ft^2 | | | | | | | | | |
| Software Ver | 2.20 | Discharge | cfs | | | | | | | | | |
| Summary | | Discharge Uncertainty | | | | | | | | | | |
| Averaging Int. | 40 | # Stations | 21 | | | | | | | | | |
| Start Edge | REW | Total Width | 4.498 | | | | | | | | | |
| Mean SNR | 36.4 dB | Total Area | 1.691 | | | | | | | | | |
| Mean Temp | 39.48 °F | Mean Depth | 0.376 | | | | | | | | | |
| Disch. Equation | Mid-Section | Mean Velocity | 1.1871 | | | | | | | | | |
| | | Total Discharge | 2.0069 | | | | | | | | | |
| Measurement Results | | | | | | | | | | | | |
| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
| 0 | 08:23 | 2.00 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| 1 | 08:23 | 2.30 | 0.6 | 0.400 | 0.6 | 0.160 | 0.5377 | 1.00 | 0.5377 | 0.120 | 0.0645 | 3.2 |
| 2 | 08:24 | 2.60 | 0.6 | 0.400 | 0.6 | 0.160 | 0.6916 | 1.00 | 0.6916 | 0.120 | 0.0829 | 4.1 |
| 3 | 08:25 | 2.90 | 0.6 | 0.300 | 0.6 | 0.120 | 0.4872 | 1.00 | 0.4872 | 0.090 | 0.0438 | 2.2 |
| 4 | 08:26 | 3.20 | 0.6 | 0.300 | 0.6 | 0.120 | 0.7539 | 1.00 | 0.7539 | 0.090 | 0.0678 | 3.4 |
| 5 | 08:27 | 3.50 | 0.6 | 0.400 | 0.6 | 0.160 | 1.6319 | 1.00 | 1.6319 | 0.120 | 0.1957 | 9.8 |
| 6 | 08:28 | 3.80 | 0.6 | 0.400 | 0.6 | 0.160 | 1.6585 | 1.00 | 1.6585 | 0.120 | 0.1989 | 9.9 |
| 7 | 08:29 | 4.10 | 0.6 | 0.450 | 0.6 | 0.180 | 1.4108 | 1.00 | 1.4108 | 0.101 | 0.1431 | 7.1 |
| 8 | 08:44 | 4.25 | 0.6 | 0.350 | 0.6 | 0.140 | 1.2178 | 1.00 | 1.2178 | 0.052 | 0.0639 | 3.2 |
| 9 | 08:30 | 4.40 | 0.6 | 0.400 | 0.6 | 0.160 | 1.9547 | 1.00 | 1.9547 | 0.060 | 0.1172 | 5.8 |
| 10 | 08:39 | 4.55 | 0.6 | 0.500 | 0.6 | 0.200 | 0.7844 | 1.00 | 0.7844 | 0.075 | 0.0588 | 2.9 |
| 11 | 08:32 | 4.70 | 0.6 | 0.450 | 0.6 | 0.180 | 0.6486 | 1.00 | 0.6486 | 0.068 | 0.0438 | 2.2 |
| 12 | 08:40 | 4.85 | 0.6 | 0.450 | 0.6 | 0.180 | 0.6109 | 1.00 | 0.6109 | 0.067 | 0.0412 | 2.1 |
| 13 | 08:33 | 5.00 | 0.6 | 0.450 | 0.6 | 0.180 | 1.8885 | 1.00 | 1.8885 | 0.067 | 0.1275 | 6.4 |
| 14 | 08:41 | 5.15 | 0.6 | 0.450 | 0.6 | 0.180 | 1.6722 | 1.00 | 1.6722 | 0.067 | 0.1129 | 5.6 |
| 15 | 08:34 | 5.30 | 0.6 | 0.450 | 0.6 | 0.180 | 1.8159 | 1.00 | 1.8159 | 0.068 | 0.1227 | 6.1 |
| 16 | 08:43 | 5.45 | 0.6 | 0.300 | 0.6 | 0.120 | 2.0568 | 1.00 | 2.0568 | 0.045 | 0.0925 | 4.6 |
| 17 | 08:35 | 5.60 | 0.6 | 0.400 | 0.6 | 0.160 | 1.7215 | 1.00 | 1.7215 | 0.090 | 0.1543 | 7.7 |
| 18 | 08:36 | 5.90 | 0.6 | 0.450 | 0.6 | 0.180 | 1.2907 | 1.00 | 1.2907 | 0.135 | 0.1742 | 8.7 |
| 19 | 08:37 | 6.20 | 0.6 | 0.450 | 0.6 | 0.180 | 0.7497 | 1.00 | 0.7497 | 0.135 | 0.1012 | 5.0 |
| 20 | 08:37 | 6.50 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File InformationFile Name
Start Date and TimeRB1.WAD
2011/06/30 08:23:36**Site Details**Site Name
Operator(s)RB1
RB



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

| | |
|---------------------|---------------------|
| File Name | RB1.WAD |
| Start Date and Time | 2011/06/30 08:23:36 |

Site Details

| | |
|-------------|-----|
| Site Name | RB1 |
| Operator(s) | RB |

Quality Control

| St | Loc | %Dep | Message |
|----|------|------|----------------------------|
| 8 | 4.25 | 0.6 | High standard error: 0.110 |
| 10 | 4.55 | 0.6 | High standard error: 0.125 |
| 11 | 4.70 | 0.6 | High angle: -33 |
| | | 0.6 | High standard error: 0.101 |
| 12 | 4.85 | 0.6 | High angle: -31 |
| | | 0.6 | High standard error: 0.135 |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

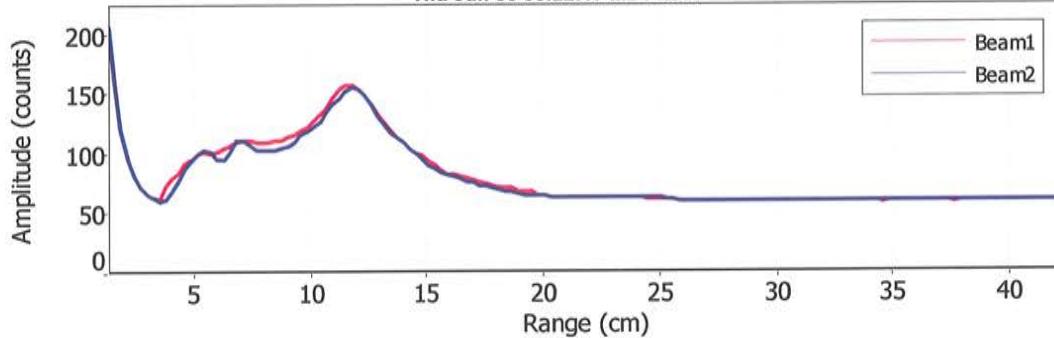
File Name RB1.WAD
Start Date and Time 2011/06/30 08:23:36

Site Details

Site Name RB1
Operator(s) RB

Automatic Quality Control Test (BeamCheck)

Thu Jun 30 08:22:17 MDT 2011



- Noise level check - Pass
- SNR check - Pass
- Peak location check - Pass
- Peak shape check - Pass



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

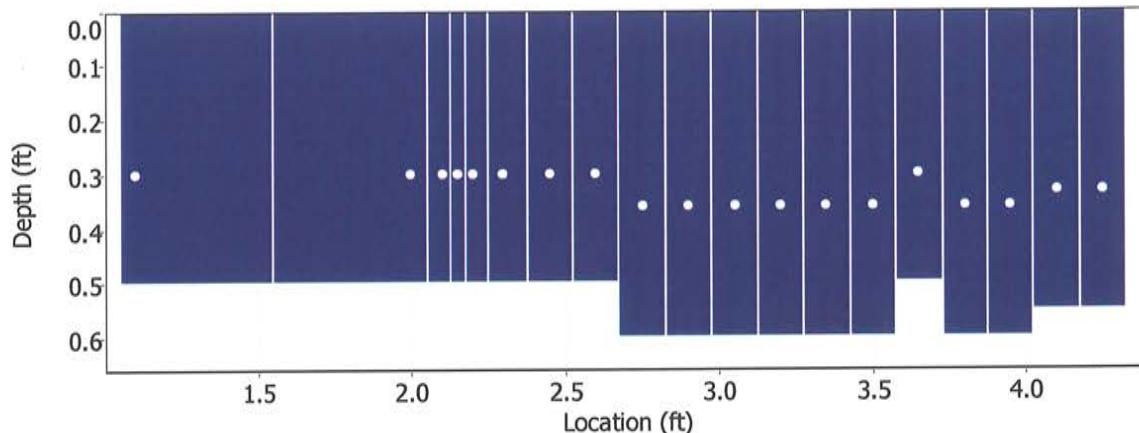
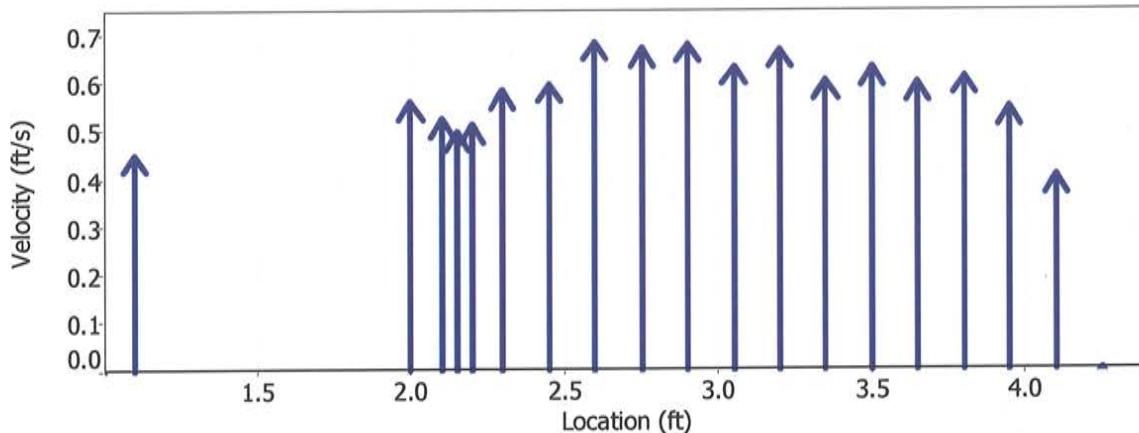
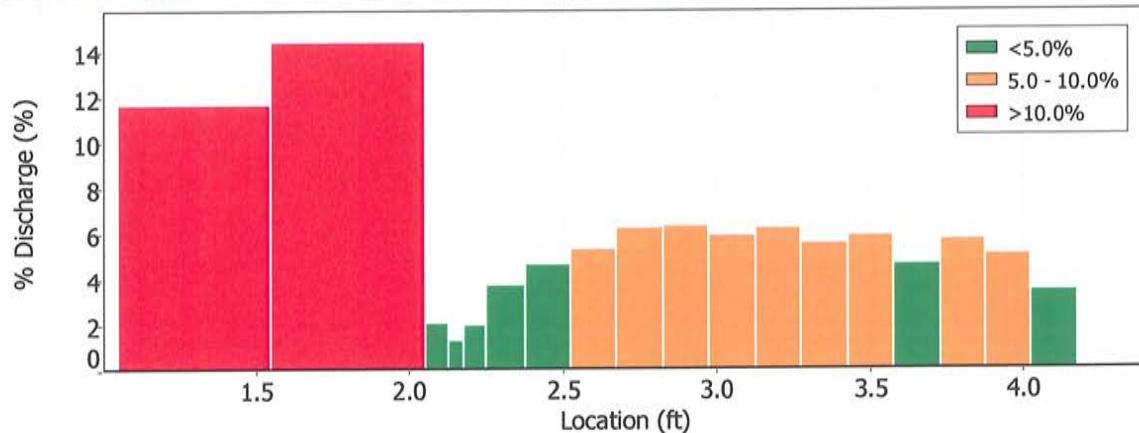
| File Information | | Site Details | | | | | | | | | | |
|----------------------|---------------------|------------------------|-----------------|-------|------|-------|--------|----------|--------|-------|--------|------|
| File Name | ST015.WAD | Site Name | ST015 | | | | | | | | | |
| Start Date and Time | 2011/06/27 18:14:32 | Operator(s) | RB | | | | | | | | | |
| System Information | | Units | (English Units) | | | | | | | | | |
| Sensor Type | FlowTracker | Distance | ft | | | | | | | | | |
| Serial # | P3514 | Velocity | ft/s | | | | | | | | | |
| CPU Firmware Version | 3.7 | Area | ft^2 | | | | | | | | | |
| Software Ver | 2.20 | Discharge | cfs | | | | | | | | | |
| Summary | | Discharge Uncertainty | | | | | | | | | | |
| Averaging Int. | 40 | # Stations | 21 | | | | | | | | | |
| Start Edge | REW | Total Width | 3.399 | | | | | | | | | |
| Mean SNR | 36.4 dB | Total Area | 1.772 | | | | | | | | | |
| Mean Temp | 51.93 °F | Mean Depth | 0.521 | | | | | | | | | |
| Disch. Equation | Mid-Section | Mean Velocity | 0.5472 | | | | | | | | | |
| | | Total Discharge | 0.9697 | | | | | | | | | |
| Measurement Results | | | | | | | | | | | | |
| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
| 0 | 18:14 | 1.00 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| 1 | 18:34 | 1.10 | 0.6 | 0.500 | 0.6 | 0.200 | 0.4521 | 1.00 | 0.4521 | 0.250 | 0.1130 | 11.7 |
| 2 | 18:37 | 2.00 | 0.6 | 0.500 | 0.6 | 0.200 | 0.5597 | 1.00 | 0.5597 | 0.250 | 0.1399 | 14.4 |
| 3 | 18:36 | 2.10 | 0.6 | 0.500 | 0.6 | 0.200 | 0.5253 | 1.00 | 0.5253 | 0.037 | 0.0197 | 2.0 |
| 4 | 18:14 | 2.15 | 0.6 | 0.500 | 0.6 | 0.200 | 0.4967 | 1.00 | 0.4967 | 0.025 | 0.0124 | 1.3 |
| 5 | 18:32 | 2.20 | 0.6 | 0.500 | 0.6 | 0.200 | 0.5125 | 1.00 | 0.5125 | 0.037 | 0.0192 | 2.0 |
| 6 | 18:16 | 2.30 | 0.6 | 0.500 | 0.6 | 0.200 | 0.5840 | 1.00 | 0.5840 | 0.062 | 0.0365 | 3.8 |
| 7 | 18:17 | 2.45 | 0.6 | 0.500 | 0.6 | 0.200 | 0.5971 | 1.00 | 0.5971 | 0.075 | 0.0448 | 4.6 |
| 8 | 18:18 | 2.60 | 0.6 | 0.500 | 0.6 | 0.200 | 0.6850 | 1.00 | 0.6850 | 0.075 | 0.0514 | 5.3 |
| 9 | 18:19 | 2.75 | 0.6 | 0.600 | 0.6 | 0.240 | 0.6709 | 1.00 | 0.6709 | 0.090 | 0.0604 | 6.2 |
| 10 | 18:20 | 2.90 | 0.6 | 0.600 | 0.6 | 0.240 | 0.6804 | 1.00 | 0.6804 | 0.090 | 0.0612 | 6.3 |
| 11 | 18:21 | 3.05 | 0.6 | 0.600 | 0.6 | 0.240 | 0.6339 | 1.00 | 0.6339 | 0.090 | 0.0570 | 5.9 |
| 12 | 18:22 | 3.20 | 0.6 | 0.600 | 0.6 | 0.240 | 0.6696 | 1.00 | 0.6696 | 0.090 | 0.0602 | 6.2 |
| 13 | 18:23 | 3.35 | 0.6 | 0.600 | 0.6 | 0.240 | 0.6030 | 1.00 | 0.6030 | 0.090 | 0.0543 | 5.6 |
| 14 | 18:24 | 3.50 | 0.6 | 0.600 | 0.6 | 0.240 | 0.6322 | 1.00 | 0.6322 | 0.090 | 0.0569 | 5.9 |
| 15 | 18:25 | 3.65 | 0.6 | 0.500 | 0.6 | 0.200 | 0.5994 | 1.00 | 0.5994 | 0.075 | 0.0449 | 4.6 |
| 16 | 18:26 | 3.80 | 0.6 | 0.600 | 0.6 | 0.240 | 0.6135 | 1.00 | 0.6135 | 0.090 | 0.0552 | 5.7 |
| 17 | 18:27 | 3.95 | 0.6 | 0.600 | 0.6 | 0.240 | 0.5479 | 1.00 | 0.5479 | 0.090 | 0.0493 | 5.1 |
| 18 | 18:28 | 4.10 | 0.6 | 0.550 | 0.6 | 0.220 | 0.4049 | 1.00 | 0.4049 | 0.082 | 0.0334 | 3.4 |
| 19 | 18:30 | 4.25 | 0.6 | 0.550 | 0.6 | 0.220 | 0.0007 | 1.00 | 0.0007 | 0.082 | 0.0001 | 0.0 |
| 20 | 18:30 | 4.40 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File InformationFile Name
Start Date and TimeST015.WAD
2011/06/27 18:14:32**Site Details**Site Name
Operator(s)ST015
RB



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

File Name ST015.WAD
Start Date and Time 2011/06/27 18:14:32

Site Details

Site Name ST015
Operator(s) RB

Quality Control

| St | Loc | %Dep | Message |
|----|------|------|---|
| 19 | 4.25 | 0.6 | SNR (58.0) is different from typical SNR (36.4) |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

| | |
|---------------------|---------------------|
| File Name | C110109A.WAD |
| Start Date and Time | 2011/09/27 17:57:21 |

Site Details

| | |
|-------------|----------|
| Site Name | C110109A |
| Operator(s) | RB |

System Information

| | |
|----------------------|-------------|
| Sensor Type | FlowTracker |
| Serial # | P3533 |
| CPU Firmware Version | 3.7 |
| Software Ver | 2.20 |

Units (English Units)

| | |
|-----------|------|
| Distance | ft |
| Velocity | ft/s |
| Area | ft^2 |
| Discharge | cfs |

Discharge Uncertainty

| Category | ISO | Stats |
|----------------|-------------|-------------|
| Accuracy | 1.0% | 1.0% |
| Depth | 0.4% | 4.7% |
| Velocity | 1.7% | 6.0% |
| Width | 0.1% | 0.1% |
| Method | 1.9% | - |
| # Stations | 2.5% | - |
| Overall | 3.8% | 7.7% |

Summary

| | | | |
|-----------------|-------------|------------------------|---------------|
| Averaging Int. | 40 | # Stations | 20 |
| Start Edge | REW | Total Width | 3.397 |
| Mean SNR | 38.4 dB | Total Area | 1.001 |
| Mean Temp | 44.68 °F | Mean Depth | 0.295 |
| Disch. Equation | Mid-Section | Mean Velocity | 0.1953 |
| | | Total Discharge | 0.1956 |

Measurement Results

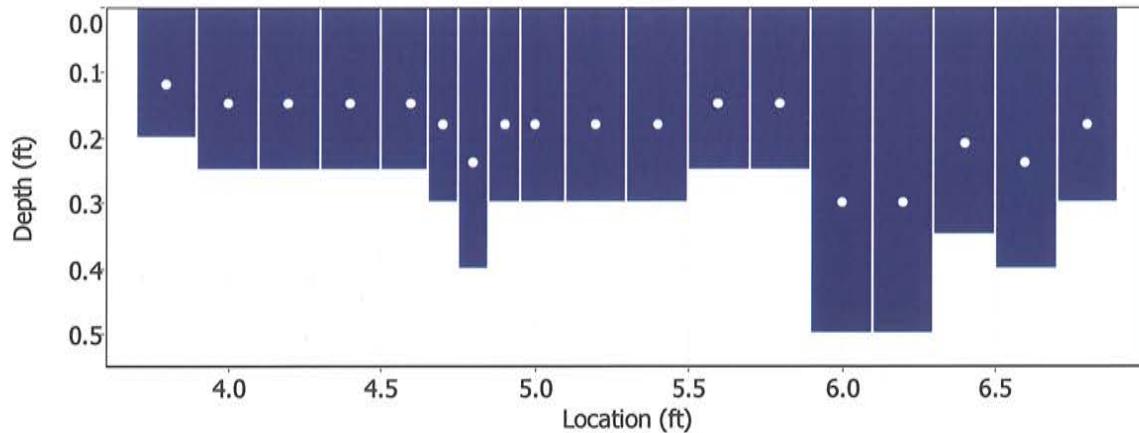
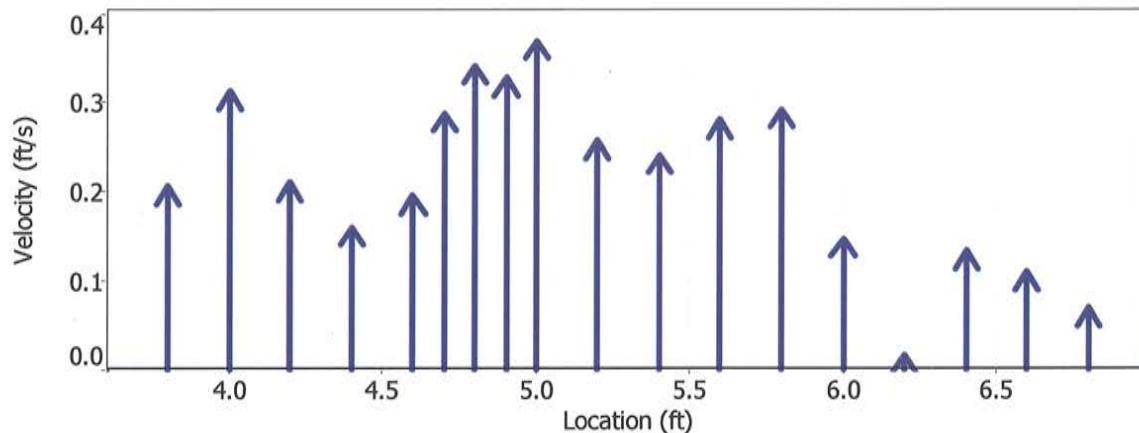
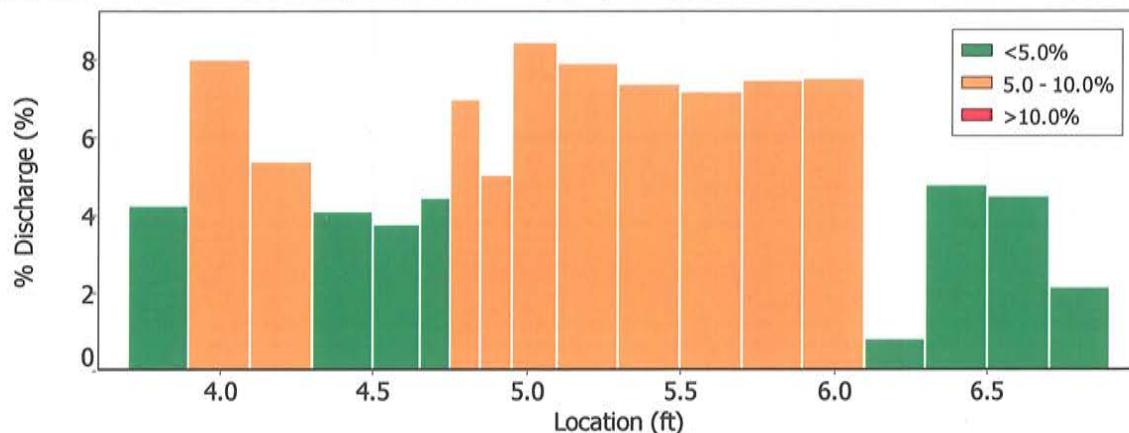
| St | Clock | Loc | Method. | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
|----|-------|------|------------|-------|------|-------|--------|-------------|---------------|--------------|---------------|------------|
| 0 | 17:57 | 3.60 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| 1 | 17:57 | 3.80 | <i>0.6</i> | 0.200 | 0.6 | 0.080 | 0.2067 | 1.00 | 0.2067 | 0.040 | 0.0083 | 4.2 |
| 2 | 17:58 | 4.00 | <i>0.6</i> | 0.250 | 0.6 | 0.100 | 0.3136 | 1.00 | 0.3136 | 0.050 | 0.0157 | 8.0 |
| 3 | 17:59 | 4.20 | <i>0.6</i> | 0.250 | 0.6 | 0.100 | 0.2106 | <i>1.00</i> | <i>0.2106</i> | <i>0.050</i> | <i>0.0105</i> | <i>5.4</i> |
| 4 | 18:00 | 4.40 | <i>0.6</i> | 0.250 | 0.6 | 0.100 | 0.1601 | <i>1.00</i> | <i>0.1601</i> | <i>0.050</i> | <i>0.0080</i> | <i>4.1</i> |
| 5 | 18:01 | 4.60 | <i>0.6</i> | 0.250 | 0.6 | 0.100 | 0.1952 | <i>1.00</i> | <i>0.1952</i> | <i>0.038</i> | <i>0.0073</i> | <i>3.8</i> |
| 6 | 18:16 | 4.70 | <i>0.6</i> | 0.300 | 0.6 | 0.120 | 0.2884 | 1.00 | 0.2884 | 0.030 | 0.0086 | 4.4 |
| 7 | 18:02 | 4.80 | <i>0.6</i> | 0.400 | 0.6 | 0.160 | 0.3419 | 1.00 | 0.3419 | 0.040 | 0.0137 | 7.0 |
| 8 | 18:15 | 4.90 | <i>0.6</i> | 0.300 | 0.6 | 0.120 | 0.3284 | 1.00 | 0.3284 | 0.030 | 0.0098 | 5.0 |
| 9 | 18:03 | 5.00 | <i>0.6</i> | 0.300 | 0.6 | 0.120 | 0.3701 | 1.00 | 0.3701 | 0.045 | 0.0166 | 8.5 |
| 10 | 18:04 | 5.20 | <i>0.6</i> | 0.300 | 0.6 | 0.120 | 0.2579 | <i>1.00</i> | <i>0.2579</i> | <i>0.060</i> | <i>0.0155</i> | <i>7.9</i> |
| 11 | 18:05 | 5.40 | <i>0.6</i> | 0.300 | 0.6 | 0.120 | 0.2415 | <i>1.00</i> | <i>0.2415</i> | <i>0.060</i> | <i>0.0145</i> | <i>7.4</i> |
| 12 | 18:06 | 5.60 | <i>0.6</i> | 0.250 | 0.6 | 0.100 | 0.2812 | <i>1.00</i> | <i>0.2812</i> | <i>0.050</i> | <i>0.0140</i> | <i>7.2</i> |
| 13 | 18:07 | 5.80 | <i>0.6</i> | 0.250 | 0.6 | 0.100 | 0.2933 | <i>1.00</i> | <i>0.2933</i> | <i>0.050</i> | <i>0.0147</i> | <i>7.5</i> |
| 14 | 18:08 | 6.00 | <i>0.6</i> | 0.500 | 0.6 | 0.200 | 0.1470 | <i>1.00</i> | <i>0.1470</i> | <i>0.100</i> | <i>0.0147</i> | <i>7.5</i> |
| 15 | 18:09 | 6.20 | <i>0.6</i> | 0.500 | 0.6 | 0.200 | 0.0161 | <i>1.00</i> | <i>0.0161</i> | <i>0.100</i> | <i>0.0016</i> | <i>0.8</i> |
| 16 | 18:11 | 6.40 | <i>0.6</i> | 0.350 | 0.6 | 0.140 | 0.1332 | <i>1.00</i> | <i>0.1332</i> | <i>0.070</i> | <i>0.0093</i> | <i>4.8</i> |
| 17 | 18:12 | 6.60 | <i>0.6</i> | 0.400 | 0.6 | 0.160 | 0.1096 | 1.00 | 0.1096 | 0.080 | 0.0088 | 4.5 |
| 18 | 18:13 | 6.80 | <i>0.6</i> | 0.300 | 0.6 | 0.120 | 0.0689 | <i>1.00</i> | <i>0.0689</i> | <i>0.060</i> | <i>0.0041</i> | <i>2.1</i> |
| 19 | 18:13 | 7.00 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File InformationFile Name
Start Date and TimeC110109A.WAD
2011/09/27 17:57:21**Site Details**Site Name
Operator(s)C110109A
RB



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

File Name C110109A.WAD
Start Date and Time 2011/09/27 17:57:21

Site Details

Site Name C110109A
Operator(s) RB

Quality Control

| St | Loc | %Dep | Message |
|----|------|------|--|
| 3 | 4.20 | 0.6 | High angle: 26 |
| 4 | 4.40 | 0.6 | High angle: 28 |
| 5 | 4.60 | 0.6 | High angle: 21 |
| 10 | 5.20 | 0.6 | High angle: 23 |
| 11 | 5.40 | 0.6 | High angle: 25 |
| 12 | 5.60 | 0.6 | High angle: 32 |
| 13 | 5.80 | 0.6 | High angle: 32 |
| 14 | 6.00 | 0.6 | High angle: -35 |
| 15 | 6.20 | 0.6 | High SNR variation during measurement: 10.3,12.5 |
| 16 | 6.40 | 0.6 | High angle: 23 |
| 18 | 6.80 | 0.6 | High angle: 40 |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

| File Information | | | | Site Details | | | | | | | | | |
|----------------------|-------------|------------------------------|---------------|-----------------------|--|--|--|--|--|-------|------|--|--|
| System Information | | Units (English Units) | | Discharge Uncertainty | | | | | | | | | |
| Sensor Type | FlowTracker | Distance | ft | Category | | | | | | | | | |
| Serial # | P3512 | Velocity | ft/s | ISO | | | | | | | | | |
| CPU Firmware Version | 3.7 | Area | ft^2 | Stats | | | | | | | | | |
| Software Ver | 2.20 | Discharge | cfs | Accuracy | | | | | | | | | |
| Summary | | Discharge Uncertainty | | | | | | | | Depth | | | |
| Averaging Int. | 40 | # Stations | 25 | Category | | | | | | | | | |
| Start Edge | REW | Total Width | 7.199 | ISO | | | | | | | | | |
| Mean SNR | 24.9 dB | Total Area | 2.872 | Stats | | | | | | | | | |
| Mean Temp | 46.07 °F | Mean Depth | 0.399 | Accuracy | | | | | | | | | |
| Disch. Equation | Mid-Section | Mean Velocity | 0.1921 | Depth | | | | | | | | | |
| | | Total Discharge | 0.5517 | Velocity | | | | | | | | | |
| | | | | Width | | | | | | | | | |
| | | | | Method | | | | | | | | | |
| | | | | # Stations | | | | | | | | | |
| | | | | Overall | | | | | | | | | |
| | | | | 3.8% | | | | | | | 6.2% | | |

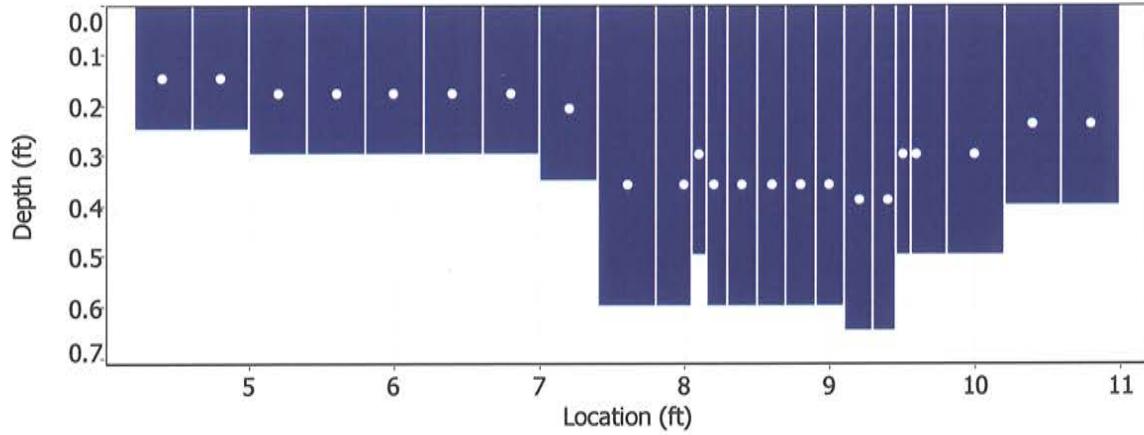
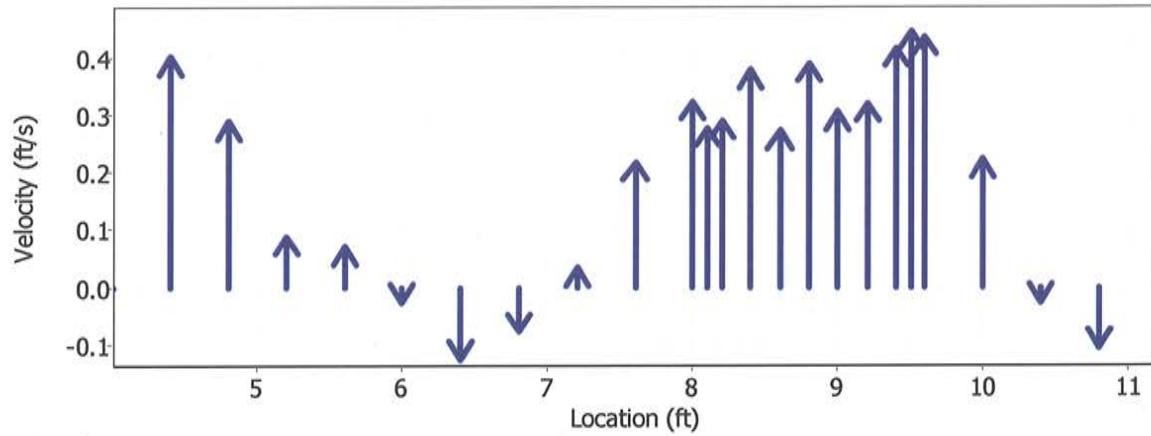
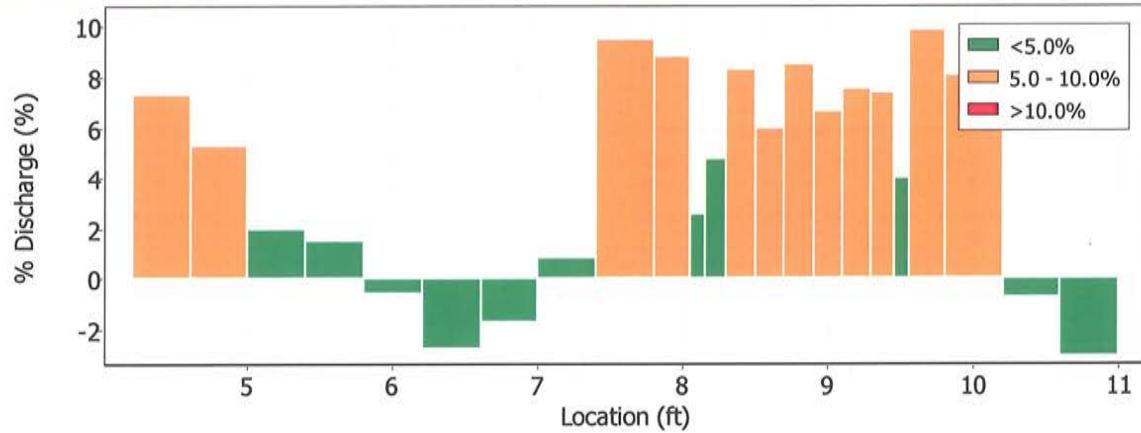
| Measurement Results | | | | | | | | | | | | |
|---------------------|--------------|--------------|------------|--------------|------------|--------------|----------------|-------------|----------------|--------------|----------------|-------------|
| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
| 0 | 15:13 | 4.00 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| 1 | <i>15:13</i> | <i>4.40</i> | <i>0.6</i> | <i>0.250</i> | <i>0.6</i> | <i>0.100</i> | <i>0.4026</i> | <i>1.00</i> | <i>0.4026</i> | <i>0.100</i> | <i>0.0402</i> | <i>7.3</i> |
| 2 | <i>15:14</i> | <i>4.80</i> | <i>0.6</i> | <i>0.250</i> | <i>0.6</i> | <i>0.100</i> | <i>0.2907</i> | <i>1.00</i> | <i>0.2907</i> | <i>0.100</i> | <i>0.0291</i> | <i>5.3</i> |
| 3 | <i>15:15</i> | <i>5.20</i> | <i>0.6</i> | <i>0.300</i> | <i>0.6</i> | <i>0.120</i> | <i>0.0892</i> | <i>1.00</i> | <i>0.0892</i> | <i>0.120</i> | <i>0.0107</i> | <i>1.9</i> |
| 4 | <i>15:17</i> | <i>5.60</i> | <i>0.6</i> | <i>0.300</i> | <i>0.6</i> | <i>0.120</i> | <i>0.0702</i> | <i>1.00</i> | <i>0.0702</i> | <i>0.120</i> | <i>0.0084</i> | <i>1.5</i> |
| 5 | <i>15:18</i> | <i>6.00</i> | <i>0.6</i> | <i>0.300</i> | <i>0.6</i> | <i>0.120</i> | <i>-0.0282</i> | <i>1.00</i> | <i>-0.0282</i> | <i>0.120</i> | <i>-0.0034</i> | <i>-0.6</i> |
| 6 | <i>15:19</i> | <i>6.40</i> | <i>0.6</i> | <i>0.300</i> | <i>0.6</i> | <i>0.120</i> | <i>-0.1270</i> | <i>1.00</i> | <i>-0.1270</i> | <i>0.120</i> | <i>-0.0152</i> | <i>-2.8</i> |
| 7 | <i>15:20</i> | <i>6.80</i> | <i>0.6</i> | <i>0.300</i> | <i>0.6</i> | <i>0.120</i> | <i>-0.0787</i> | <i>1.00</i> | <i>-0.0787</i> | <i>0.120</i> | <i>-0.0094</i> | <i>-1.7</i> |
| 8 | <i>15:21</i> | <i>7.20</i> | <i>0.6</i> | <i>0.350</i> | <i>0.6</i> | <i>0.140</i> | <i>0.0335</i> | <i>1.00</i> | <i>0.0335</i> | <i>0.140</i> | <i>0.0047</i> | <i>0.8</i> |
| 9 | <i>15:22</i> | <i>7.60</i> | <i>0.6</i> | <i>0.600</i> | <i>0.6</i> | <i>0.240</i> | <i>0.2188</i> | <i>1.00</i> | <i>0.2188</i> | <i>0.240</i> | <i>0.0525</i> | <i>9.5</i> |
| 10 | <i>15:23</i> | <i>8.00</i> | <i>0.6</i> | <i>0.600</i> | <i>0.6</i> | <i>0.240</i> | <i>0.3251</i> | <i>1.00</i> | <i>0.3251</i> | <i>0.150</i> | <i>0.0488</i> | <i>8.9</i> |
| 11 | <i>15:39</i> | <i>8.10</i> | <i>0.6</i> | <i>0.500</i> | <i>0.6</i> | <i>0.200</i> | <i>0.2792</i> | <i>1.00</i> | <i>0.2792</i> | <i>0.050</i> | <i>0.0140</i> | <i>2.5</i> |
| 12 | 15:33 | 8.20 | 0.6 | 0.600 | 0.6 | 0.240 | 0.2923 | 1.00 | 0.2923 | 0.090 | 0.0262 | 4.8 |
| 13 | 15:24 | 8.40 | 0.6 | 0.600 | 0.6 | 0.240 | 0.3802 | 1.00 | 0.3802 | 0.120 | 0.0456 | 8.3 |
| 14 | 15:34 | 8.60 | 0.6 | 0.600 | 0.6 | 0.240 | 0.2740 | 1.00 | 0.2740 | 0.120 | 0.0329 | 6.0 |
| 15 | 15:25 | 8.80 | 0.6 | 0.600 | 0.6 | 0.240 | 0.3924 | 1.00 | 0.3924 | 0.120 | 0.0471 | 8.5 |
| 16 | 15:35 | 9.00 | 0.6 | 0.600 | 0.6 | 0.240 | 0.3061 | 1.00 | 0.3061 | 0.120 | 0.0367 | 6.7 |
| 17 | 15:26 | 9.20 | 0.6 | 0.650 | 0.6 | 0.260 | 0.3212 | 1.00 | 0.3212 | 0.130 | 0.0417 | 7.6 |
| 18 | 15:37 | 9.40 | 0.6 | 0.650 | 0.6 | 0.260 | 0.4177 | 1.00 | 0.4177 | 0.098 | 0.0408 | 7.4 |
| 19 | <i>15:38</i> | <i>9.50</i> | <i>0.6</i> | <i>0.500</i> | <i>0.6</i> | <i>0.200</i> | <i>0.4475</i> | <i>1.00</i> | <i>0.4475</i> | <i>0.050</i> | <i>0.0223</i> | <i>4.0</i> |
| 20 | 15:27 | 9.60 | 0.6 | 0.500 | 0.6 | 0.200 | 0.4383 | 1.00 | 0.4383 | 0.125 | 0.0547 | 9.9 |
| 21 | <i>15:29</i> | <i>10.00</i> | <i>0.6</i> | <i>0.500</i> | <i>0.6</i> | <i>0.200</i> | <i>0.2234</i> | <i>1.00</i> | <i>0.2234</i> | <i>0.200</i> | <i>0.0447</i> | <i>8.1</i> |
| 22 | <i>15:30</i> | <i>10.40</i> | <i>0.6</i> | <i>0.400</i> | <i>0.6</i> | <i>0.160</i> | <i>-0.0269</i> | <i>1.00</i> | <i>-0.0269</i> | <i>0.160</i> | <i>-0.0043</i> | <i>-0.8</i> |
| 23 | <i>15:31</i> | <i>10.80</i> | <i>0.6</i> | <i>0.400</i> | <i>0.6</i> | <i>0.160</i> | <i>-0.1073</i> | <i>1.00</i> | <i>-0.1073</i> | <i>0.160</i> | <i>-0.0172</i> | <i>-3.1</i> |
| 24 | <i>15:31</i> | <i>11.20</i> | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File InformationFile Name:
Start Date and TimeCSB120A1.WAD
2011/09/27 15:13:08**Site Details**Site Name:
Operator(s)CSC120A1
RB



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

File Name CSB120A1.WAD
Start Date and Time 2011/09/27 15:13:08

Site Details

Site Name CSC120A1
Operator(s) RB

Quality Control

| St | Loc | %Dep | Message |
|----|-------|------|--|
| 1 | 4.40 | 0.6 | High angle: 24 |
| 2 | 4.80 | 0.6 | High angle: 33 |
| 3 | 5.20 | 0.6 | High angle: 62 |
| 4 | 5.60 | 0.6 | High angle: 66 |
| 5 | 6.00 | 0.6 | High angle: 103 |
| | | 0.6 | High SNR variation during measurement: 5.2,5.2 |
| 6 | 6.40 | 0.6 | High angle: 168 |
| | | 0.6 | High SNR variation during measurement: 5.2,5.2 |
| 7 | 6.80 | 0.6 | High angle: -131 |
| | | 0.6 | High SNR variation during measurement: 5.6,6.9 |
| 8 | 7.20 | 0.6 | High angle: -62 |
| | | 0.6 | High SNR variation during measurement: 5.2,6.0 |
| 9 | 7.60 | 0.6 | High angle: -29 |
| | | 0.6 | High SNR variation during measurement: 5.2,6.0 |
| 10 | 8.00 | 0.6 | High SNR variation during measurement: 4.7,5.2 |
| 11 | 8.10 | 0.6 | High SNR variation during measurement: 5.2,4.3 |
| 19 | 9.50 | 0.6 | High standard error: 0.031 |
| 21 | 10.00 | 0.6 | High angle: 21 |
| 22 | 10.40 | 0.6 | High angle: -124 |
| | | 0.6 | High SNR variation during measurement: 4.7,6.5 |
| 23 | 10.80 | 0.6 | High angle: -179 |
| | | 0.6 | High SNR variation during measurement: 5.6,5.6 |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

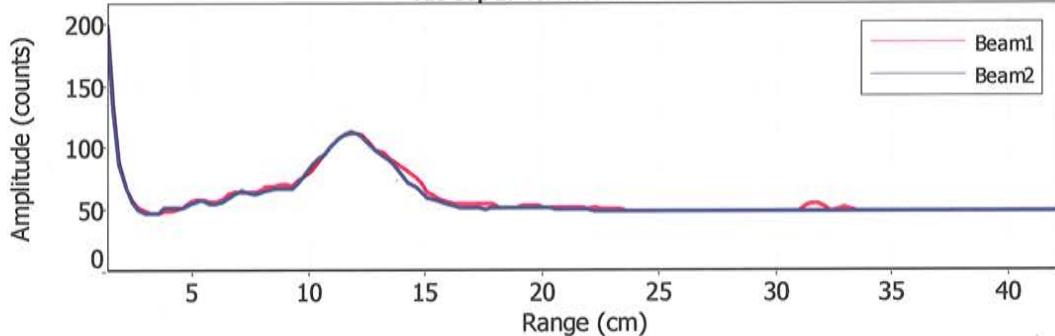
File Name CSB120A1.WAD
Start Date and Time 2011/09/27 15:13:08

Site Details

Site Name CSC120A1
Operator(s) RB

Automatic Quality Control Test (BeamCheck)

Tue Sep 27 15:11:58 MDT 2011



- Noise level check - Pass
- SNR check - Pass
- Peak location check - Pass
- Peak shape check - Pass



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

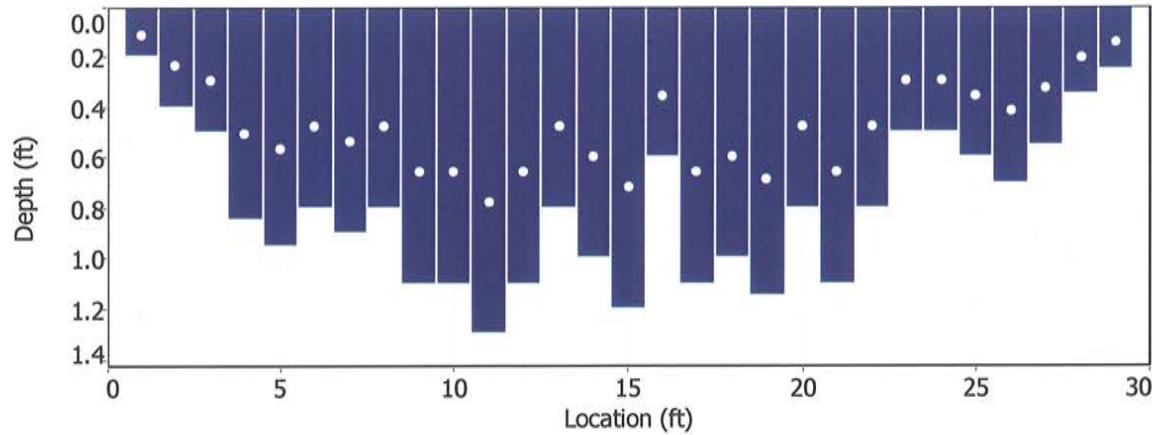
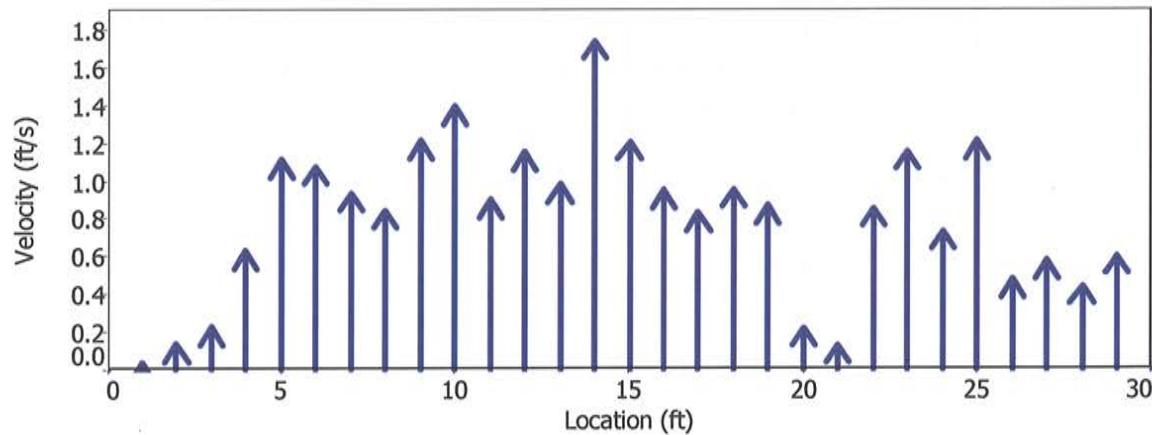
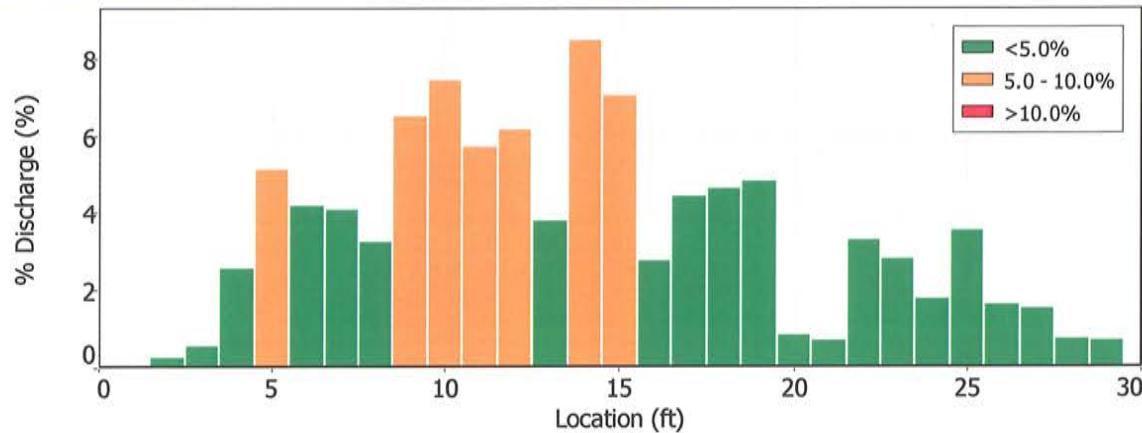
| File Information | | | | Site Details | | | | | | | | |
|----------------------|--|-----------------|---------|-----------------------|------|-------|--------|-----------------------|--------|-------|--------|-----|
| File Name | CSC101.WAD | Site Name | CSC101 | | | | | | | | | |
| Start Date and Time | 2011/09/26 10:48:41 <th>Operator(s)</th> <td>CL</td> <th data-cs="4" data-kind="parent"></th> <th data-kind="ghost"></th> <th data-kind="ghost"></th> <th data-kind="ghost"></th> <th data-cs="4" data-kind="parent"></th> <th data-kind="ghost"></th> <th data-kind="ghost"></th> <th data-kind="ghost"></th> | Operator(s) | CL | | | | | | | | | |
| System Information | | | | Units (English Units) | | | | Discharge Uncertainty | | | | |
| Sensor Type | FlowTracker | Distance | ft | Accuracy | 1.0% | 1.0% | 1.0% | Category | ISO | Stats | | |
| Serial # | P3514 | Velocity | ft/s | Depth | 0.2% | 4.0% | 4.0% | | | | | |
| CPU Firmware Version | 3.7 | Area | ft^2 | Velocity | 1.3% | 5.4% | 5.4% | | | | | |
| Software Ver | 2.20 | Discharge | cfs | Width | 0.1% | 0.1% | 0.1% | | | | | |
| Summary | | | | | | | | Method | 1.7% | - | - | |
| Averaging Int. | 40 | # Stations | 31 | | | | | # Stations | 1.7% | - | - | |
| Start Edge | LEW | Total Width | 30.000 | | | | | Overall | 2.9% | 6.8% | | |
| Mean SNR | 19.6 dB | Total Area | 23.000 | | | | | | | | | |
| Mean Temp | 47.03 °F | Mean Depth | 0.767 | | | | | | | | | |
| Disch. Equation | Mid-Section | Mean Velocity | 0.8925 | | | | | | | | | |
| | | Total Discharge | 20.5264 | | | | | | | | | |
| Measurement Results | | | | | | | | | | | | |
| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
| 0 | 10:48 | 0.00 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| 1 | 10:48 | 1.00 | 0.6 | 0.200 | 0.6 | 0.080 | 0.0312 | 1.00 | 0.0312 | 0.200 | 0.0062 | 0.0 |
| 2 | 10:49 | 2.00 | 0.6 | 0.400 | 0.6 | 0.160 | 0.1345 | 1.00 | 0.1345 | 0.400 | 0.0538 | 0.3 |
| 3 | 10:50 | 3.00 | 0.6 | 0.500 | 0.6 | 0.200 | 0.2260 | 1.00 | 0.2260 | 0.500 | 0.1130 | 0.6 |
| 4 | 10:52 | 4.00 | 0.6 | 0.850 | 0.6 | 0.340 | 0.6286 | 1.00 | 0.6286 | 0.850 | 0.5344 | 2.6 |
| 5 | 10:53 | 5.00 | 0.6 | 0.950 | 0.6 | 0.380 | 1.1135 | 1.00 | 1.1135 | 0.950 | 1.0580 | 5.2 |
| 6 | 10:54 | 6.00 | 0.6 | 0.800 | 0.6 | 0.320 | 1.0794 | 1.00 | 1.0794 | 0.800 | 0.8634 | 4.2 |
| 7 | 10:56 | 7.00 | 0.6 | 0.900 | 0.6 | 0.360 | 0.9386 | 1.00 | 0.9386 | 0.900 | 0.8447 | 4.1 |
| 8 | 10:57 | 8.00 | 0.6 | 0.800 | 0.6 | 0.320 | 0.8461 | 1.00 | 0.8461 | 0.800 | 0.6768 | 3.3 |
| 9 | 10:58 | 9.00 | 0.6 | 1.100 | 0.6 | 0.440 | 1.2142 | 1.00 | 1.2142 | 1.100 | 1.3357 | 6.5 |
| 10 | 10:59 | 10.00 | 0.6 | 1.100 | 0.6 | 0.440 | 1.3947 | 1.00 | 1.3947 | 1.100 | 1.5342 | 7.5 |
| 11 | 11:02 | 11.00 | 0.6 | 1.300 | 0.6 | 0.520 | 0.9029 | 1.00 | 0.9029 | 1.300 | 1.1736 | 5.7 |
| 12 | 11:03 | 12.00 | 0.6 | 1.100 | 0.6 | 0.440 | 1.1552 | 1.00 | 1.1552 | 1.100 | 1.2708 | 6.2 |
| 13 | 11:04 | 13.00 | 0.6 | 0.800 | 0.6 | 0.320 | 0.9833 | 1.00 | 0.9833 | 0.800 | 0.7865 | 3.8 |
| 14 | 11:06 | 14.00 | 0.6 | 1.000 | 0.6 | 0.400 | 1.7454 | 1.00 | 1.7454 | 1.000 | 1.7454 | 8.5 |
| 15 | 11:07 | 15.00 | 0.6 | 1.200 | 0.6 | 0.480 | 1.2116 | 1.00 | 1.2116 | 1.200 | 1.4541 | 7.1 |
| 16 | 11:09 | 16.00 | 0.6 | 0.600 | 0.6 | 0.240 | 0.9531 | 1.00 | 0.9531 | 0.600 | 0.5719 | 2.8 |
| 17 | 11:10 | 17.00 | 0.6 | 1.100 | 0.6 | 0.440 | 0.8297 | 1.00 | 0.8297 | 1.100 | 0.9128 | 4.4 |
| 18 | 11:11 | 18.00 | 0.6 | 1.000 | 0.6 | 0.400 | 0.9557 | 1.00 | 0.9557 | 1.000 | 0.9557 | 4.7 |
| 19 | 11:12 | 19.00 | 0.6 | 1.150 | 0.6 | 0.460 | 0.8698 | 1.00 | 0.8698 | 1.150 | 1.0002 | 4.9 |
| 20 | 11:14 | 20.00 | 0.6 | 0.800 | 0.6 | 0.320 | 0.2195 | 1.00 | 0.2195 | 0.800 | 0.1756 | 0.9 |
| 21 | 11:15 | 21.00 | 0.6 | 1.100 | 0.6 | 0.440 | 0.1289 | 1.00 | 0.1289 | 1.100 | 0.1418 | 0.7 |
| 22 | 11:16 | 22.00 | 0.6 | 0.800 | 0.6 | 0.320 | 0.8560 | 1.00 | 0.8560 | 0.800 | 0.6847 | 3.3 |
| 23 | 11:17 | 23.00 | 0.6 | 0.500 | 0.6 | 0.200 | 1.1608 | 1.00 | 1.1608 | 0.500 | 0.5804 | 2.8 |
| 24 | 11:18 | 24.00 | 0.6 | 0.500 | 0.6 | 0.200 | 0.7375 | 1.00 | 0.7375 | 0.500 | 0.3688 | 1.8 |
| 25 | 11:19 | 25.00 | 0.6 | 0.600 | 0.6 | 0.240 | 1.2139 | 1.00 | 1.2139 | 0.600 | 0.7284 | 3.5 |
| 26 | 11:20 | 26.00 | 0.6 | 0.700 | 0.6 | 0.280 | 0.4764 | 1.00 | 0.4764 | 0.700 | 0.3335 | 1.6 |
| 27 | 11:23 | 27.00 | 0.6 | 0.550 | 0.6 | 0.220 | 0.5764 | 1.00 | 0.5764 | 0.550 | 0.3170 | 1.5 |
| 28 | 11:25 | 28.00 | 0.6 | 0.350 | 0.6 | 0.140 | 0.4419 | 1.00 | 0.4419 | 0.350 | 0.1547 | 0.8 |
| 29 | 11:26 | 29.00 | 0.6 | 0.250 | 0.6 | 0.100 | 0.6014 | 1.00 | 0.6014 | 0.250 | 0.1503 | 0.7 |
| 30 | 11:26 | 30.00 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |

Rows in Italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File InformationFile Name
Start Date and TimeCSC101.WAD
2011/09/26 10:48:41**Site Details**Site Name
Operator(s)CSC101
CL



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

| File Information | | | Site Details |
|------------------|------------|---------------------|---|
| File Name | CSC101.WAD | Start Date and Time | Site Name Operator(s) |
| St | Loc | %Dep | Message |
| 1 | 1.00 | 0.6 | High SNR variation during measurement: 5.6,5.2 |
| 2 | 2.00 | 0.6 | High SNR variation during measurement: 5.2,5.6 |
| 3 | 3.00 | 0.6 | High SNR variation during measurement: 5.2,4.7 |
| 4 | 4.00 | 0.6 | High SNR variation during measurement: 4.7,5.2 |
| 9 | 9.00 | 0.6 | High angle: 25 |
| 11 | 11.00 | 0.6 | High angle: 26 |
| 12 | 12.00 | 0.6 | High angle: 25 |
| 13 | 13.00 | 0.6 | High angle: 34 |
| 15 | 15.00 | 0.6 | High standard error: 0.087 |
| 16 | 16.00 | 0.6 | High standard error: 0.092 |
| 17 | 17.00 | 0.6 | High standard error: 0.099 |
| 18 | 18.00 | 0.6 | High standard error: 0.111 |
| 20 | 20.00 | 0.6 | High angle: -41 |
| 21 | 21.00 | 0.6 | High angle: -37 0.6 High SNR variation during measurement: 5.6,4.7 |
| 22 | 22.00 | 0.6 | High angle: -29 |
| 23 | 23.00 | 0.6 | High angle: -29 |
| 24 | 24.00 | 0.6 | High standard error: 0.081 |
| 25 | 25.00 | 0.6 | High standard error: 0.084 |
| 29 | 29.00 | 0.6 | High SNR variation during measurement: 5.6,5.2 |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

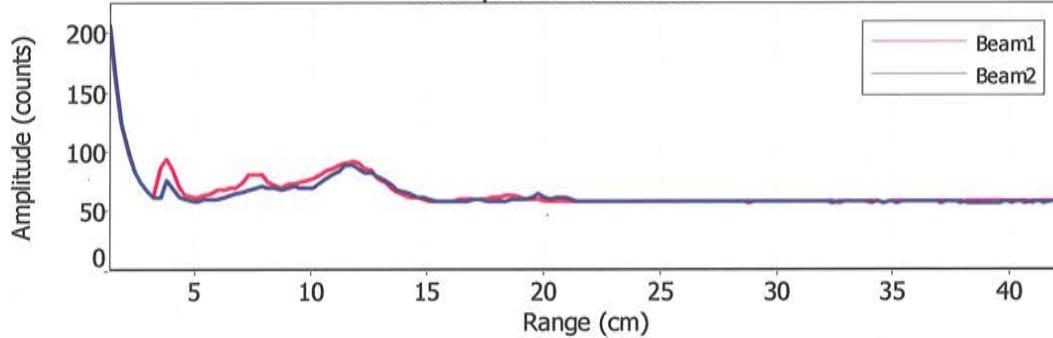
File Name CSC101.WAD
Start Date and Time 2011/09/26 10:48:41

Site Details

Site Name CSC101
Operator(s) CL

Automatic Quality Control Test (BeamCheck)

Mon Sep 26 10:47:44 MDT 2011



- ✓ Noise level check - Pass
- ✓ SNR check - Pass
- ✓ Peak location check - Pass
- ✗ Peak shape check - Fail



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

| File Information | | Site Details | |
|------------------------------|---------------------|------------------------|-----------------|
| File Name | CSC102.102.WAD | Site Name | |
| Start Date and Time | | | |
| | 2011/09/26 12:54:11 | Operator(s) | DRR |
| System Information | | | |
| Sensor Type | FlowTracker | Units | (English Units) |
| Serial # | P3568 | Distance | ft |
| CPU Firmware Version | 3.7 | Velocity | ft/s |
| Software Ver | 2.20 | Area | ft^2 |
| | | Discharge | cfs |
| Summary | | | |
| Averaging Int. | 40 | # Stations | 26 |
| Start Edge | REW | Total Width | 27.001 |
| Mean SNR | 34.5 dB | Total Area | 19.891 |
| Mean Temp | 51.32 °F | Mean Depth | 0.737 |
| Disch. Equation | Mid-Section | Mean Velocity | 0.9992 |
| | | Total Discharge | 19.8742 |
| Discharge Uncertainty | | | |
| Category | ISO | Stats | |
| Accuracy | 1.0% | 1.0% | |
| Depth | 0.3% | 2.6% | |
| Velocity | 1.6% | 11.2% | |
| Width | 0.1% | 0.1% | |
| Method | 1.8% | - | |
| # Stations | 2.0% | - | |
| Overall | 3.3% | 11.6% | |

| Measurement Results | | | | | | | | | | | | |
|---------------------|--------------|--------------|------------|--------------|------------|--------------|---------------|-------------|---------------|--------------|---------------|------------|
| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
| 0 | 12:54 | 2.00 | None | 0.100 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.1952 | 0.068 | 0.0132 | 0.1 |
| <i>1</i> | <i>12:54</i> | <i>3.35</i> | <i>0.6</i> | <i>0.300</i> | <i>0.6</i> | <i>0.120</i> | <i>0.1952</i> | <i>1.00</i> | <i>0.1952</i> | <i>0.405</i> | <i>0.0790</i> | <i>0.4</i> |
| 2 | 12:57 | 4.70 | 0.6 | 0.750 | 0.6 | 0.300 | 1.2871 | 1.00 | 1.2871 | 1.013 | 1.3032 | 6.6 |
| 3 | 13:03 | 6.05 | 0.6 | 0.850 | 0.6 | 0.340 | 0.7346 | 1.00 | 0.7346 | 1.148 | 0.8430 | 4.2 |
| 4 | 13:07 | 7.40 | 0.6 | 0.600 | 0.6 | 0.240 | 0.5348 | 1.00 | 0.5348 | 0.810 | 0.4332 | 2.2 |
| 5 | 13:08 | 8.75 | 0.6 | 0.700 | 0.6 | 0.280 | 1.3917 | 1.00 | 1.3917 | 0.945 | 1.3155 | 6.6 |
| 6 | 13:10 | 10.10 | 0.6 | 0.750 | 0.6 | 0.300 | 1.2441 | 1.00 | 1.2441 | 1.013 | 1.2597 | 6.3 |
| 7 | 13:18 | 11.45 | 0.6 | 0.850 | 0.6 | 0.340 | 1.8550 | 1.00 | 1.8550 | 0.722 | 1.3399 | 6.7 |
| <i>8</i> | <i>13:49</i> | <i>11.80</i> | <i>0.6</i> | <i>0.900</i> | <i>0.6</i> | <i>0.360</i> | <i>1.7208</i> | <i>1.00</i> | <i>1.7208</i> | <i>0.607</i> | <i>1.0454</i> | <i>5.3</i> |
| 9 | 13:19 | 12.80 | 0.6 | 0.750 | 0.6 | 0.300 | 2.7700 | 1.00 | 2.7700 | 0.450 | 1.2466 | 6.3 |
| 10 | 13:47 | 13.00 | 0.6 | 0.700 | 0.6 | 0.280 | 1.8776 | 1.00 | 1.8776 | 0.473 | 0.8874 | 4.5 |
| 11 | 13:21 | 14.15 | 0.6 | 0.650 | 0.6 | 0.260 | 0.7444 | 1.00 | 0.7444 | 0.813 | 0.6049 | 3.0 |
| 12 | 13:22 | 15.50 | 0.6 | 0.800 | 0.6 | 0.320 | 0.9065 | 1.00 | 0.9065 | 1.080 | 0.9789 | 4.9 |
| <i>13</i> | <i>13:23</i> | <i>16.85</i> | <i>0.6</i> | <i>1.000</i> | <i>0.6</i> | <i>0.400</i> | <i>0.1844</i> | <i>1.00</i> | <i>0.1844</i> | <i>1.250</i> | <i>0.2304</i> | <i>1.2</i> |
| 14 | 13:45 | 18.00 | 0.6 | 1.000 | 0.6 | 0.400 | 0.0190 | 1.00 | 0.0190 | 0.675 | 0.0128 | 0.1 |
| 15 | 13:30 | 18.20 | 0.6 | 1.100 | 0.6 | 0.440 | 1.6919 | 1.00 | 1.6919 | 0.220 | 0.3722 | 1.9 |
| 16 | 13:44 | 18.40 | 0.6 | 1.000 | 0.6 | 0.400 | 0.5564 | 1.00 | 0.5564 | 0.675 | 0.3756 | 1.9 |
| 17 | 13:32 | 19.55 | 0.6 | 1.100 | 0.6 | 0.440 | 1.4114 | 1.00 | 1.4114 | 1.155 | 1.6303 | 8.2 |
| 18 | 13:51 | 20.50 | 0.6 | 0.800 | 0.6 | 0.320 | 1.6673 | 1.00 | 1.6673 | 0.540 | 0.9003 | 4.5 |
| 19 | 13:34 | 20.90 | 0.6 | 0.800 | 0.6 | 0.320 | 1.8717 | 1.00 | 1.8717 | 0.700 | 1.3107 | 6.6 |
| 20 | 13:37 | 22.25 | 0.6 | 0.700 | 0.6 | 0.280 | 1.5190 | 1.00 | 1.5190 | 0.945 | 1.4358 | 7.2 |
| 21 | 13:38 | 23.60 | 0.6 | 0.800 | 0.6 | 0.320 | 0.9544 | 1.00 | 0.9544 | 1.080 | 1.0306 | 5.2 |
| 22 | 13:39 | 24.95 | 0.6 | 0.900 | 0.6 | 0.360 | 0.8228 | 1.00 | 0.8228 | 1.215 | 0.9997 | 5.0 |
| 23 | 13:40 | 26.30 | 0.6 | 0.900 | 0.6 | 0.360 | 0.2844 | 1.00 | 0.2844 | 1.215 | 0.3456 | 1.7 |
| 24 | 13:41 | 27.65 | 0.6 | 0.500 | 0.6 | 0.200 | -0.1778 | 1.00 | -0.1778 | 0.675 | -0.1200 | -0.6 |
| 25 | 13:41 | 29.00 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.

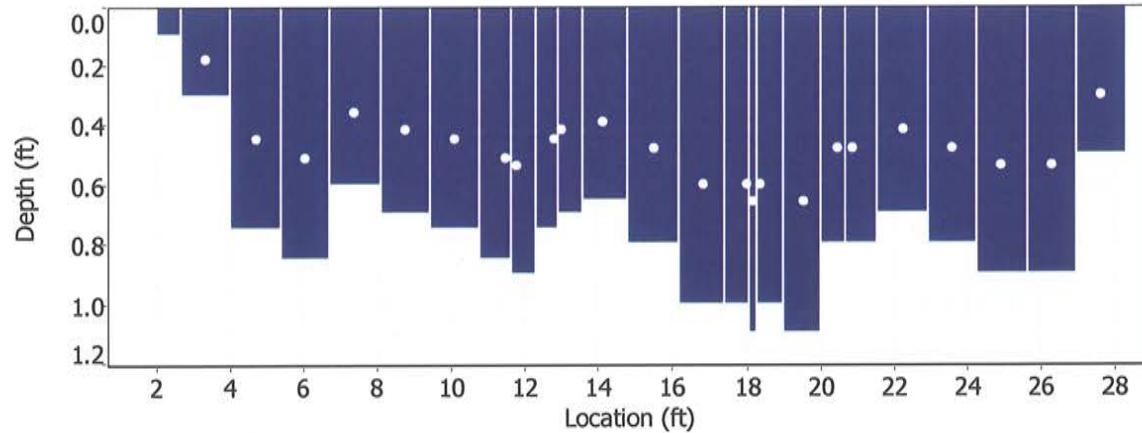
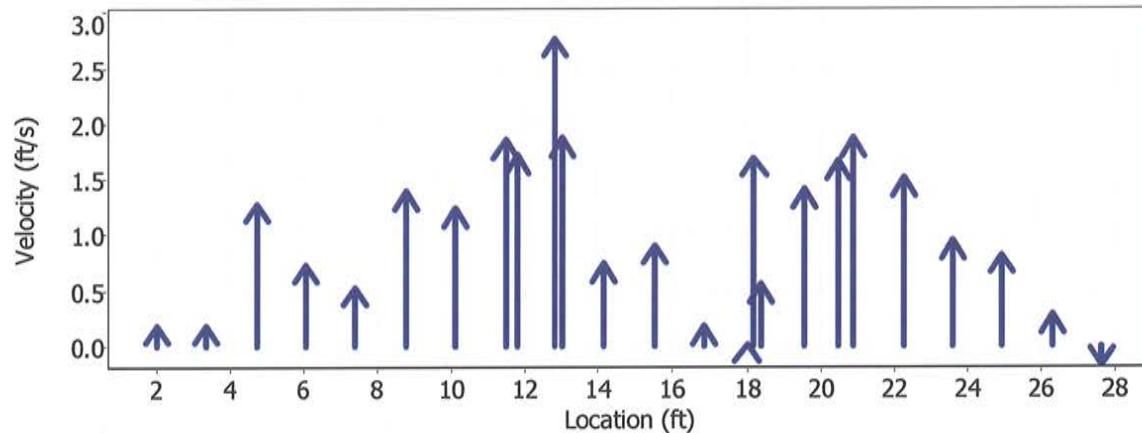
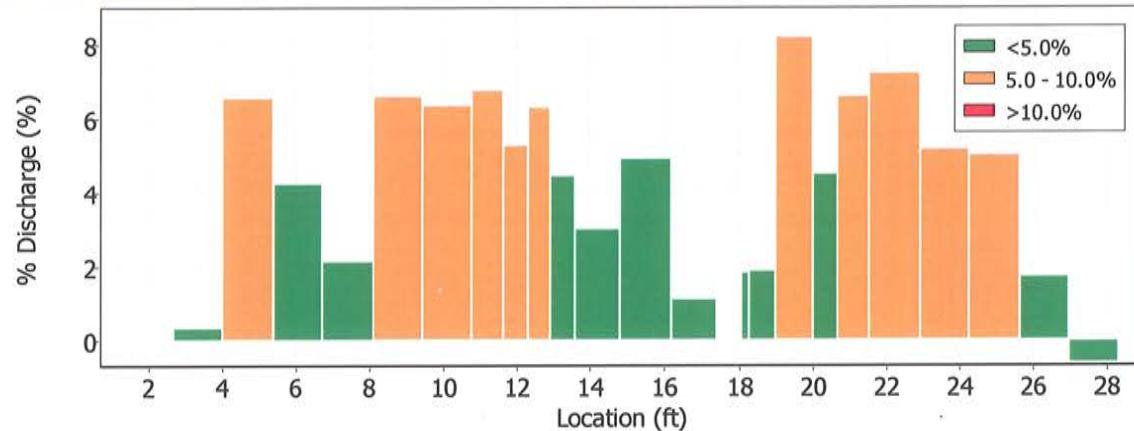


Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File InformationFile Name
Start Date and TimeCSC102.102.WAD
2011/09/26 12:54:11**Site Details**Site Name
Operator(s)

DRR





Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File InformationFile Name
Start Date and TimeCSC102.102.WAD
2011/09/26 12:54:11**Site Details**Site Name
Operator(s)

DRR

Quality Control

| St | Loc | %Dep | Message |
|----|-------|------|--|
| 1 | 3.35 | 0.6 | High angle: -34 |
| 8 | 11.80 | 0.6 | High standard error: 0.112 |
| 10 | 13.00 | 0.6 | High standard error: 0.134 |
| 13 | 16.85 | 0.6 | High angle: -51 |
| 15 | 18.20 | 0.6 | High angle: -27 |
| 16 | 18.40 | 0.6 | High angle: -45 |
| 17 | 19.55 | 0.6 | High standard error: 0.119 |
| 18 | 20.50 | 0.6 | High standard error: 0.103 |
| 19 | 20.90 | 0.6 | High standard error: 0.121 |
| 20 | 22.25 | 0.6 | High angle: 22 0.6 High standard error: 0.125 |
| 21 | 23.60 | 0.6 | High angle: 39 |
| 22 | 24.95 | 0.6 | High angle: 29 |
| 23 | 26.30 | 0.6 | High angle: 34 |
| 24 | 27.65 | 0.6 | High angle: -136 |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

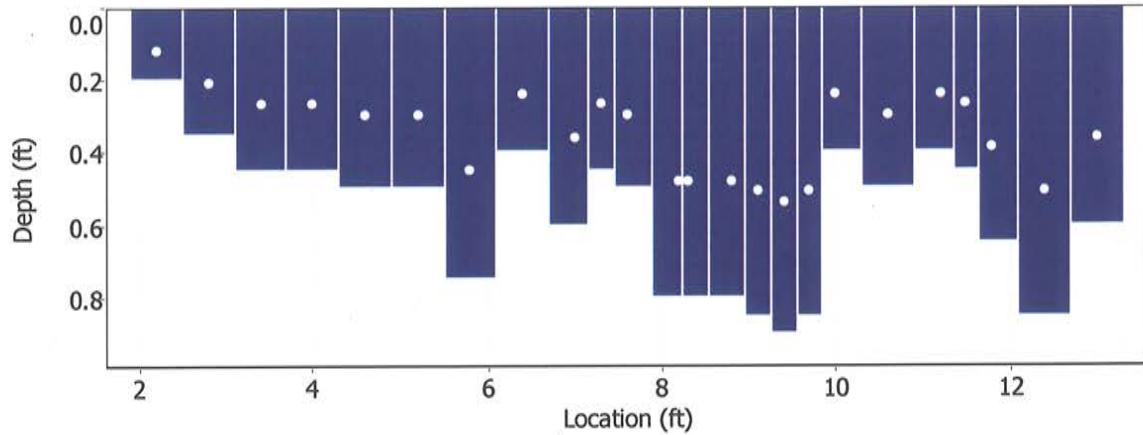
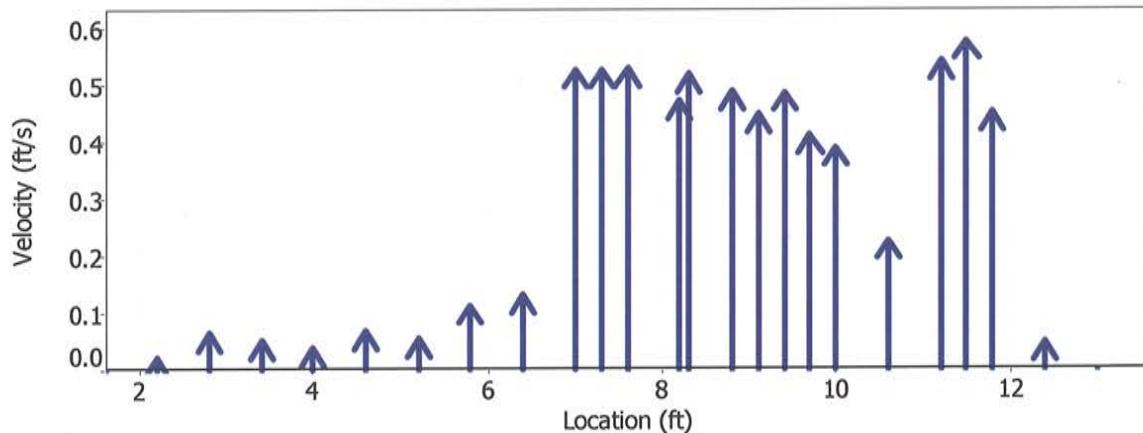
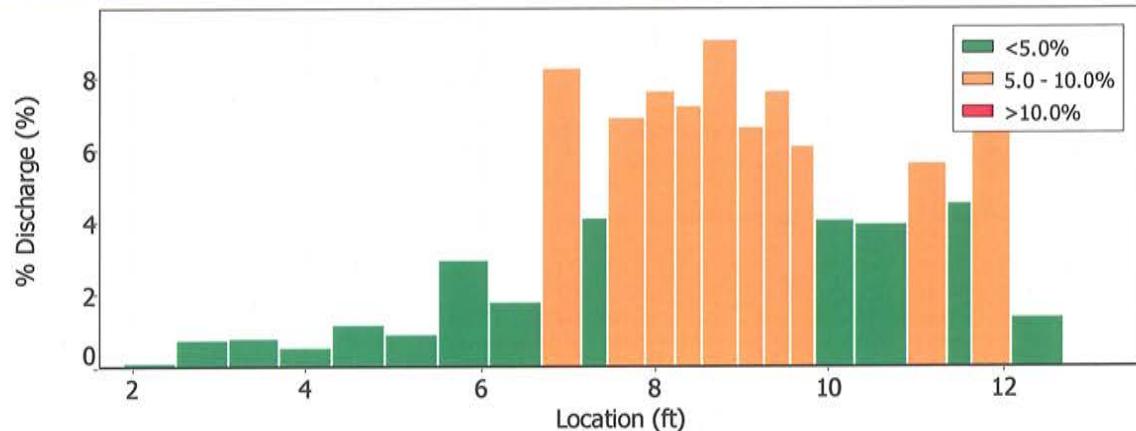
| File Information | | | | Site Details | | | | | | | | |
|----------------------|--|------------------------|-----------------|-----------------------|------|-------|--------|----------|--------|-------|--------|-----|
| File Name | CSC103.WAD | Site Name | CSC103 | | | | | | | | | |
| Start Date and Time | 2011/09/26 13:38:32 <th>Operator(s)</th> <td>RB</td> <th data-cs="2" data-kind="parent"></th> <th data-kind="ghost"></th> <th data-cs="2" data-kind="parent"></th> <th data-kind="ghost"></th> | Operator(s) | RB | | | | | | | | | |
| System Information | | Units | (English Units) | Discharge Uncertainty | | | | | | | | |
| Sensor Type | FlowTracker | Distance | ft | Category | ISO | Stats | | | | | | |
| Serial # | P3533 | Velocity | ft/s | Accuracy | 1.0% | 1.0% | | | | | | |
| CPU Firmware Version | 3.7 | Area | ft^2 | Depth | 0.4% | 4.7% | | | | | | |
| Software Ver | 2.20 | Discharge | cfs | Velocity | 1.5% | 5.6% | | | | | | |
| Summary | | | | Width | 0.1% | 0.1% | | | | | | |
| Averaging Int. | 40 | # Stations | 26 | Method | 1.9% | - | | | | | | |
| Start Edge | REW | Total Width | 12.001 | # Stations | 2.0% | - | | | | | | |
| Mean SNR | 36.8 dB | Total Area | 6.368 | Overall | 3.3% | 7.4% | | | | | | |
| Mean Temp | 50.86 °F | Mean Depth | 0.531 | | | | | | | | | |
| Disch. Equation | Mid-Section | Mean Velocity | 0.2703 | | | | | | | | | |
| | | Total Discharge | | | | | | | | | | |
| Measurement Results | | | | | | | | | | | | |
| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
| 0 | 13:38 | 1.60 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| 1 | <i>13:38</i> | 2.20 | 0.6 | 0.200 | 0.6 | 0.080 | 0.0203 | 1.00 | 0.0203 | 0.120 | 0.0024 | 0.1 |
| 2 | <i>13:39</i> | 2.80 | 0.6 | 0.350 | 0.6 | 0.140 | 0.0643 | 1.00 | 0.0643 | 0.210 | 0.0135 | 0.8 |
| 3 | <i>13:40</i> | 3.40 | 0.6 | 0.450 | 0.6 | 0.180 | 0.0502 | 1.00 | 0.0502 | 0.270 | 0.0136 | 0.8 |
| 4 | <i>13:41</i> | 4.00 | 0.6 | 0.450 | 0.6 | 0.180 | 0.0367 | 1.00 | 0.0367 | 0.270 | 0.0099 | 0.6 |
| 5 | <i>13:42</i> | 4.60 | 0.6 | 0.500 | 0.6 | 0.200 | 0.0673 | 1.00 | 0.0673 | 0.300 | 0.0202 | 1.2 |
| 6 | 13:43 | 5.20 | 0.6 | 0.500 | 0.6 | 0.200 | 0.0535 | 1.00 | 0.0535 | 0.300 | 0.0160 | 0.9 |
| 7 | <i>13:44</i> | 5.80 | 0.6 | 0.750 | 0.6 | 0.300 | 0.1129 | 1.00 | 0.1129 | 0.450 | 0.0508 | 3.0 |
| 8 | <i>13:45</i> | 6.40 | 0.6 | 0.400 | 0.6 | 0.160 | 0.1312 | 1.00 | 0.1312 | 0.240 | 0.0315 | 1.8 |
| 9 | <i>13:46</i> | 7.00 | 0.6 | 0.600 | 0.6 | 0.240 | 0.5262 | 1.00 | 0.5262 | 0.270 | 0.1420 | 8.2 |
| 10 | <i>14:01</i> | 7.30 | 0.6 | 0.450 | 0.6 | 0.180 | 0.5266 | 1.00 | 0.5266 | 0.135 | 0.0711 | 4.1 |
| 11 | <i>13:47</i> | 7.60 | 0.6 | 0.500 | 0.6 | 0.200 | 0.5276 | 1.00 | 0.5276 | 0.225 | 0.1188 | 6.9 |
| 12 | <i>13:48</i> | 8.20 | 0.6 | 0.800 | 0.6 | 0.320 | 0.4708 | 1.00 | 0.4708 | 0.280 | 0.1316 | 7.6 |
| 13 | <i>14:02</i> | 8.30 | 0.6 | 0.800 | 0.6 | 0.320 | 0.5180 | 1.00 | 0.5180 | 0.240 | 0.1243 | 7.2 |
| 14 | <i>13:49</i> | 8.80 | 0.6 | 0.800 | 0.6 | 0.320 | 0.4875 | 1.00 | 0.4875 | 0.320 | 0.1560 | 9.1 |
| 15 | <i>14:04</i> | 9.10 | 0.6 | 0.850 | 0.6 | 0.340 | 0.4475 | 1.00 | 0.4475 | 0.255 | 0.1141 | 6.6 |
| 16 | 13:50 | 9.40 | 0.6 | 0.900 | 0.6 | 0.360 | 0.4862 | 1.00 | 0.4862 | 0.270 | 0.1313 | 7.6 |
| 17 | <i>14:05</i> | 9.70 | 0.6 | 0.850 | 0.6 | 0.340 | 0.4111 | 1.00 | 0.4111 | 0.255 | 0.1048 | 6.1 |
| 18 | 13:51 | 10.00 | 0.6 | 0.400 | 0.6 | 0.160 | 0.3891 | 1.00 | 0.3891 | 0.180 | 0.0701 | 4.1 |
| 19 | <i>13:52</i> | 10.60 | 0.6 | 0.500 | 0.6 | 0.200 | 0.2260 | 1.00 | 0.2260 | 0.300 | 0.0678 | 3.9 |
| 20 | 13:53 | 11.20 | 0.6 | 0.400 | 0.6 | 0.160 | 0.5417 | 1.00 | 0.5417 | 0.180 | 0.0974 | 5.7 |
| 21 | 14:06 | 11.50 | 0.6 | 0.450 | 0.6 | 0.180 | 0.5761 | 1.00 | 0.5761 | 0.135 | 0.0778 | 4.5 |
| 22 | 13:54 | 11.80 | 0.6 | 0.650 | 0.6 | 0.260 | 0.4518 | 1.00 | 0.4518 | 0.293 | 0.1323 | 7.7 |
| 23 | 13:57 | 12.40 | 0.6 | 0.850 | 0.6 | 0.340 | 0.0472 | 1.00 | 0.0472 | 0.510 | 0.0241 | 1.4 |
| 24 | <i>13:59</i> | 13.00 | 0.6 | 0.600 | 0.6 | 0.240 | 0.0000 | 1.00 | 0.0000 | 0.360 | 0.0000 | 0.0 |
| 25 | 13:59 | 13.60 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File InformationFile Name
Start Date and TimeCSC103.WAD
2011/09/26 13:38:32**Site Details**Site Name
Operator(s)CSC103
RB



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

| File Information | | | Site Details |
|------------------------|------------|---------------------|---|
| File Name | CSC103.WAD | Start Date and Time | Site Name CSC103 Operator(s) RB |
| Quality Control | | | |
| St | Loc | %Dep | Message |
| 1 | 2.20 | 0.6 | High angle: -81 |
| | | 0.6 | SNR (25.3) is different from typical SNR (36.8) |
| 2 | 2.80 | 0.6 | High angle: -72 |
| | | 0.6 | SNR (26.2) is different from typical SNR (36.8) |
| 3 | 3.40 | 0.6 | High angle: -74 |
| 4 | 4.00 | 0.6 | High angle: -78 |
| 5 | 4.60 | 0.6 | High angle: -60 |
| 7 | 5.80 | 0.6 | High angle: -71 |
| 8 | 6.40 | 0.6 | High angle: -46 |
| 9 | 7.00 | 0.6 | High angle: -39 |
| 10 | 7.30 | 0.6 | High angle: -36 |
| 11 | 7.60 | 0.6 | High angle: -31 |
| 12 | 8.20 | 0.6 | High angle: -36 |
| 13 | 8.30 | 0.6 | High angle: -28 |
| 14 | 8.80 | 0.6 | High angle: -35 |
| 15 | 9.10 | 0.6 | High angle: -21 |
| 17 | 9.70 | 0.6 | High standard error: 0.032 |
| 19 | 10.60 | 0.6 | High angle: -38 |
| | | 0.6 | High standard error: 0.031 |
| 24 | 13.00 | 0.6 | SNR (62.4) is different from typical SNR (36.8) |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

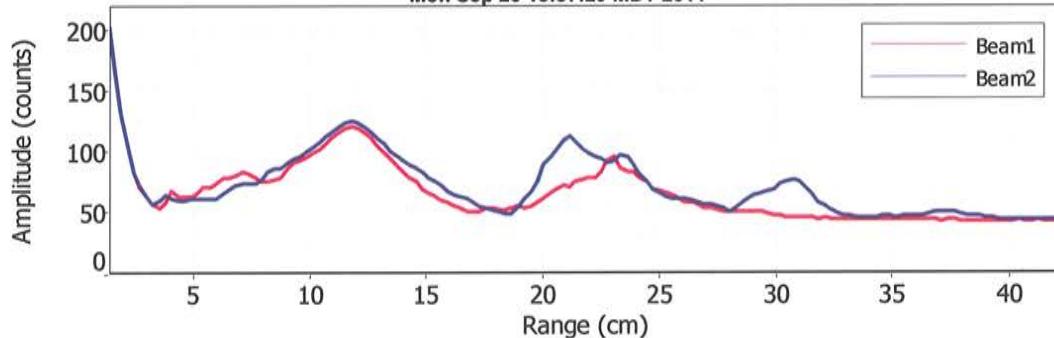
File Name CSC103.WAD
Start Date and Time 2011/09/26 13:38:32

Site Details

Site Name CSC103
Operator(s) RB

Automatic Quality Control Test (BeamCheck)

Mon Sep 26 13:37:29 MDT 2011



- Noise level check - Pass
- SNR check - Pass
- Peak location check - Pass
- Peak shape check - Pass



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

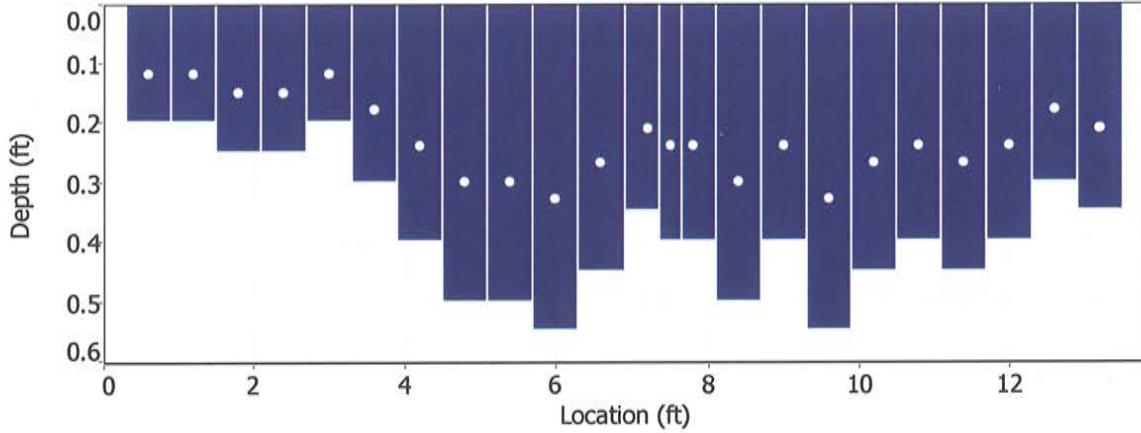
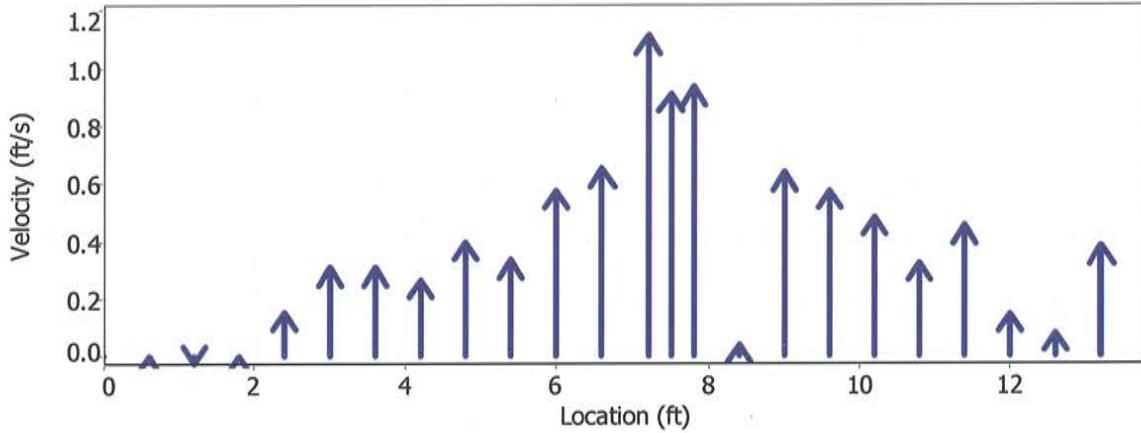
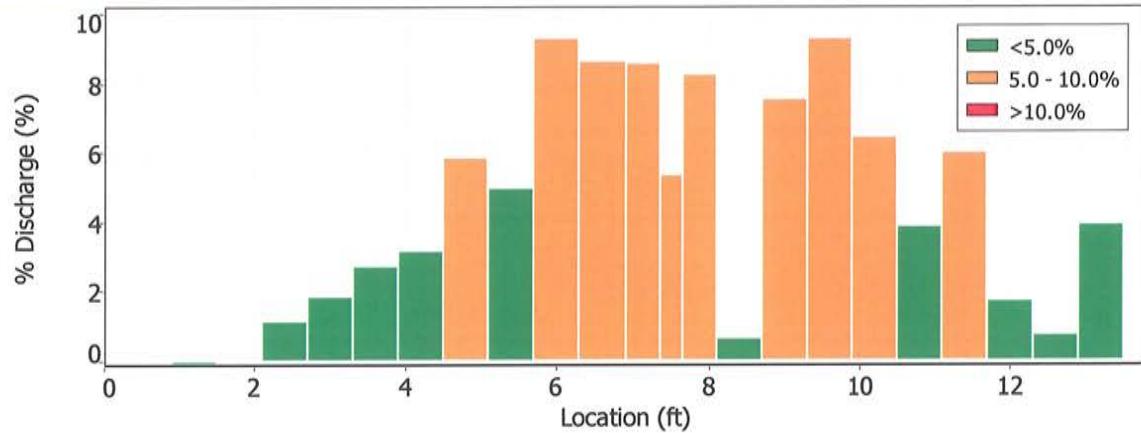
| File Information | | | | Site Details | | | | | | | | |
|----------------------------|-------------|---------------|--------|-----------------------|------|-------|---------|----------|---------|-------|---------|------|
| System Information | | Units | | Discharge Uncertainty | | | | | | | | |
| Sensor Type | FlowTracker | Distance | ft | Category | | | | | | | | |
| Serial # | P3514 | Velocity | ft/s | ISO | | | | | | | | |
| CPU Firmware Version | 3.7 | Area | ft^2 | Stats | | | | | | | | |
| Software Ver | 2.20 | Discharge | cfs | Accuracy | | | | | | | | |
| Summary | | | | Depth | | | | | | | | |
| Averaging Int. | 40 | # Stations | 25 | Velocity | | | | | | | | |
| Start Edge | REW | Total Width | 13.802 | Width | | | | | | | | |
| Mean SNR | 27.8 dB | Total Area | 5.018 | Method | | | | | | | | |
| Mean Temp | 52.34 °F | Mean Depth | 0.364 | # Stations | | | | | | | | |
| Disch. Equation | Mid-Section | Mean Velocity | 0.4073 | Overall | | | | | | | | |
| | | | | 3.2% | | | | | | | | |
| Measurement Results | | | | | | | | | | | | |
| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
| 0 | 14:11 | 0.00 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| 1 | 14:11 | 0.60 | 0.6 | 0.200 | 0.6 | 0.080 | 0.0013 | 1.00 | 0.0013 | 0.120 | 0.0002 | 0.0 |
| 2 | 14:13 | 1.20 | 0.6 | 0.200 | 0.6 | 0.080 | -0.0240 | 1.00 | -0.0240 | 0.120 | -0.0029 | -0.1 |
| 3 | 14:15 | 1.80 | 0.6 | 0.250 | 0.6 | 0.100 | 0.0049 | 1.00 | 0.0049 | 0.150 | 0.0007 | 0.0 |
| 4 | 14:16 | 2.40 | 0.6 | 0.250 | 0.6 | 0.100 | 0.1555 | 1.00 | 0.1555 | 0.150 | 0.0233 | 1.1 |
| 5 | 14:18 | 3.00 | 0.6 | 0.200 | 0.6 | 0.080 | 0.3127 | 1.00 | 0.3127 | 0.120 | 0.0375 | 1.8 |
| 6 | 14:19 | 3.60 | 0.6 | 0.300 | 0.6 | 0.120 | 0.3120 | 1.00 | 0.3120 | 0.180 | 0.0561 | 2.7 |
| 7 | 14:21 | 4.20 | 0.6 | 0.400 | 0.6 | 0.160 | 0.2674 | 1.00 | 0.2674 | 0.240 | 0.0642 | 3.1 |
| 8 | 14:23 | 4.80 | 0.6 | 0.500 | 0.6 | 0.200 | 0.3996 | 1.00 | 0.3996 | 0.300 | 0.1199 | 5.9 |
| 9 | 14:24 | 5.40 | 0.6 | 0.500 | 0.6 | 0.200 | 0.3386 | 1.00 | 0.3386 | 0.300 | 0.1016 | 5.0 |
| 10 | 14:25 | 6.00 | 0.6 | 0.550 | 0.6 | 0.220 | 0.5778 | 1.00 | 0.5778 | 0.330 | 0.1906 | 9.3 |
| 11 | 14:27 | 6.60 | 0.6 | 0.450 | 0.6 | 0.180 | 0.6526 | 1.00 | 0.6526 | 0.270 | 0.1763 | 8.6 |
| 12 | 14:28 | 7.20 | 0.6 | 0.350 | 0.6 | 0.140 | 1.1132 | 1.00 | 1.1132 | 0.157 | 0.1752 | 8.6 |
| 13 | 14:47 | 7.50 | 0.6 | 0.400 | 0.6 | 0.160 | 0.9121 | 1.00 | 0.9121 | 0.120 | 0.1094 | 5.4 |
| 14 | 14:30 | 7.80 | 0.6 | 0.400 | 0.6 | 0.160 | 0.9360 | 1.00 | 0.9360 | 0.180 | 0.1686 | 8.3 |
| 15 | 14:32 | 8.40 | 0.6 | 0.500 | 0.6 | 0.200 | 0.0433 | 1.00 | 0.0433 | 0.300 | 0.0130 | 0.6 |
| 16 | 14:33 | 9.00 | 0.6 | 0.400 | 0.6 | 0.160 | 0.6407 | 1.00 | 0.6407 | 0.240 | 0.1538 | 7.5 |
| 17 | 14:34 | 9.60 | 0.6 | 0.550 | 0.6 | 0.220 | 0.5781 | 1.00 | 0.5781 | 0.330 | 0.1907 | 9.3 |
| 18 | 14:35 | 10.20 | 0.6 | 0.450 | 0.6 | 0.180 | 0.4865 | 1.00 | 0.4865 | 0.270 | 0.1314 | 6.4 |
| 19 | 14:36 | 10.80 | 0.6 | 0.400 | 0.6 | 0.160 | 0.3287 | 1.00 | 0.3287 | 0.240 | 0.0789 | 3.9 |
| 20 | 14:38 | 11.40 | 0.6 | 0.450 | 0.6 | 0.180 | 0.4567 | 1.00 | 0.4567 | 0.270 | 0.1234 | 6.0 |
| 21 | 14:39 | 12.00 | 0.6 | 0.400 | 0.6 | 0.160 | 0.1499 | 1.00 | 0.1499 | 0.240 | 0.0360 | 1.8 |
| 22 | 14:41 | 12.60 | 0.6 | 0.300 | 0.6 | 0.120 | 0.0853 | 1.00 | 0.0853 | 0.180 | 0.0153 | 0.8 |
| 23 | 14:45 | 13.20 | 0.6 | 0.350 | 0.6 | 0.140 | 0.3825 | 1.00 | 0.3825 | 0.210 | 0.0804 | 3.9 |
| 24 | 14:45 | 13.80 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File InformationFile Name
Start Date and TimeCSC103A.WAD
2011/09/26 14:11:34**Site Details**Site Name
Operator(s)CSC103A
JW



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

| File Information | | | Site Details |
|---------------------|---------------------|------|---|
| File Name | CSC103A.WAD | | |
| Start Date and Time | | | |
| | 2011/09/26 14:11:34 | | CSC103A |
| | | | JW |
| Quality Control | | | |
| St | Loc | %Dep | Message |
| 1 | 0.60 | 0.6 | High differences in beam SNR: 38.2,18.4 |
| | | 0.6 | Boundary QC is Fair; possible boundary interference |
| 2 | 1.20 | 0.6 | High angle: -155 |
| 13 | 7.50 | 0.6 | High angle: 21 |
| 15 | 8.40 | 0.6 | High angle: -60 |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

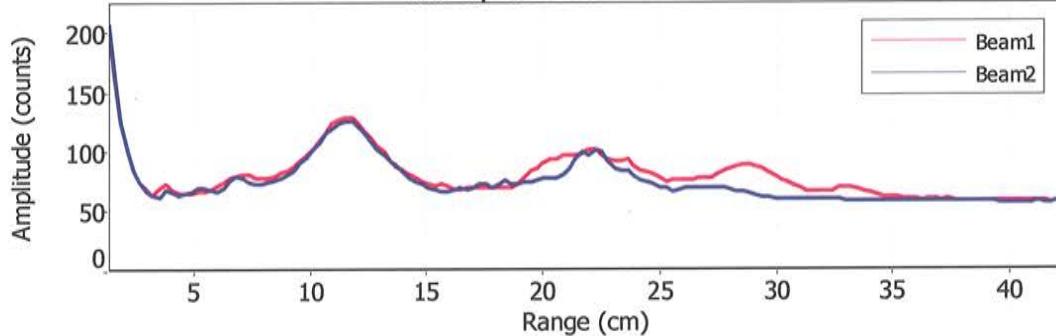
File Name CSC103A.WAD
Start Date and Time 2011/09/26 14:11:34

Site Details

Site Name CSC103A
Operator(s) JW

Automatic Quality Control Test (BeamCheck)

Mon Sep 26 14:07:59 MDT 2011



- Noise level check - Pass
- SNR check - Pass
- Peak location check - Pass
- Peak shape check - Pass



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

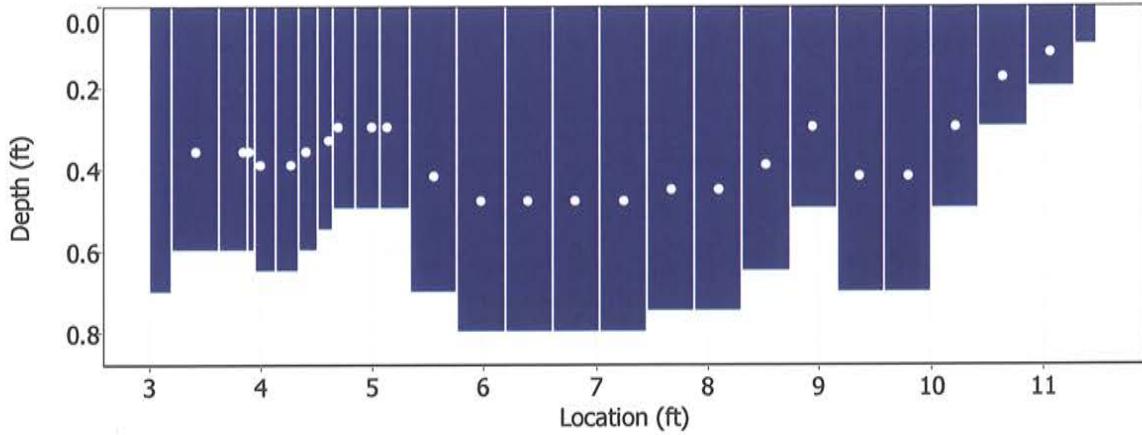
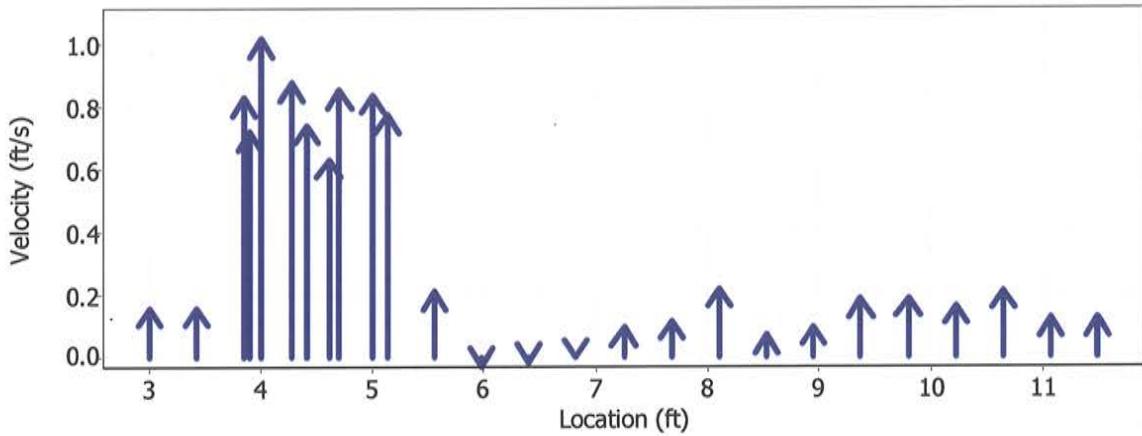
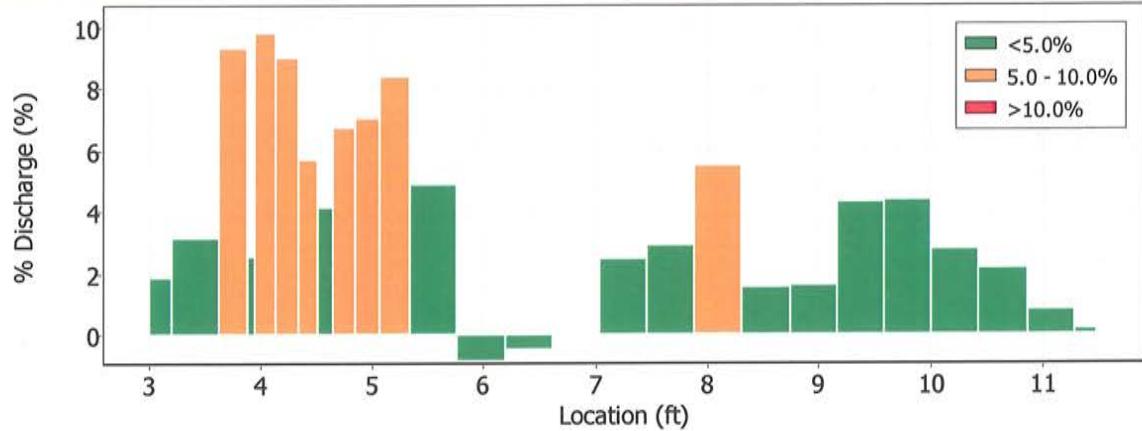
| File Information | | | | Site Details | | | | | | | | | | | |
|----------------------|--------------|---------------------|------------|-----------------------|-----------------|--------------------------|----------------|-------------|----------------|--------------|----------------|-------------|--|--|--|
| File Name | | CSC104.WAD | | Site Name | | CSC104 | | | | | | | | | |
| Start Date and Time | | 2011/09/26 14:54:42 | | Operator(s) | | DRR | | | | | | | | | |
| System Information | | | | Units (English Units) | | | | | | | | | | | |
| Sensor Type | | | | Distance | ft | Accuracy 1.0% | | | | | | | | | |
| Serial # | | | | Velocity | ft/s | Depth 0.4% | | | | | | | | | |
| CPU Firmware Version | | | | Area | ft^2 | Velocity 1.7% | | | | | | | | | |
| Software Ver | | | | Discharge | cfs | Width 0.1% | | | | | | | | | |
| Summary | | | | Discharge Uncertainty | | | | | | | | | | | |
| Averaging Int. | | | | 40 | # Stations | Category ISO Stats | | | | | | | | | |
| Start Edge | | | | LEW | Total Width | Accuracy 1.0% | | | | | | | | | |
| Mean SNR | | | | 40.6 dB | Total Area | Depth 0.4% | | | | | | | | | |
| Mean Temp | | | | 54.52 °F | Mean Depth | Velocity 1.7% | | | | | | | | | |
| Disch. Equation | | | | Mid-Section | Mean Velocity | Width 0.1% | | | | | | | | | |
| | | | | | Total Discharge | Method 1.9% | | | | | | | | | |
| | | | | | 1.2614 | # Stations 2.0% | | | | | | | | | |
| | | | | | | Overall 3.4% 8.6% | | | | | | | | | |
| Measurement Results | | | | | | | | | | | | | | | |
| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q | | | |
| 0 | 14:54 | 3.00 | None | 0.700 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.1568 | 0.149 | 0.0233 | 1.8 | | | |
| 1 | 14:54 | 3.42 | 0.6 | 0.600 | 0.6 | 0.240 | 0.1568 | 1.00 | 0.1568 | 0.255 | 0.0400 | 3.2 | | | |
| 2 | <i>14:58</i> | <i>3.85</i> | <i>0.6</i> | <i>0.600</i> | <i>0.6</i> | <i>0.240</i> | <i>0.8278</i> | <i>1.00</i> | <i>0.8278</i> | <i>0.143</i> | <i>0.1180</i> | <i>9.4</i> | | | |
| 3 | <i>15:31</i> | <i>3.90</i> | <i>0.6</i> | <i>0.600</i> | <i>0.6</i> | <i>0.240</i> | <i>0.7169</i> | <i>1.00</i> | <i>0.7169</i> | <i>0.045</i> | <i>0.0323</i> | <i>2.6</i> | | | |
| 4 | 15:27 | 4.00 | 0.6 | 0.650 | 0.6 | 0.260 | 1.0148 | 1.00 | 1.0148 | 0.122 | 0.1236 | 9.8 | | | |
| 5 | <i>15:00</i> | <i>4.27</i> | <i>0.6</i> | <i>0.650</i> | <i>0.6</i> | <i>0.260</i> | <i>0.8747</i> | <i>1.00</i> | <i>0.8747</i> | <i>0.130</i> | <i>0.1137</i> | <i>9.0</i> | | | |
| 6 | <i>15:28</i> | <i>4.40</i> | <i>0.6</i> | <i>0.600</i> | <i>0.6</i> | <i>0.240</i> | <i>0.7379</i> | <i>1.00</i> | <i>0.7379</i> | <i>0.098</i> | <i>0.0721</i> | <i>5.7</i> | | | |
| 7 | <i>15:33</i> | <i>4.60</i> | <i>0.6</i> | <i>0.550</i> | <i>0.6</i> | <i>0.220</i> | <i>0.6299</i> | <i>1.00</i> | <i>0.6299</i> | <i>0.082</i> | <i>0.0519</i> | <i>4.1</i> | | | |
| 8 | <i>15:02</i> | <i>4.70</i> | <i>0.6</i> | <i>0.500</i> | <i>0.6</i> | <i>0.200</i> | <i>0.8507</i> | <i>1.00</i> | <i>0.8507</i> | <i>0.100</i> | <i>0.0851</i> | <i>6.7</i> | | | |
| 9 | 15:30 | 5.00 | 0.6 | 0.500 | 0.6 | 0.200 | 0.8356 | 1.00 | 0.8356 | 0.106 | 0.0888 | 7.0 | | | |
| 10 | <i>15:03</i> | <i>5.12</i> | <i>0.6</i> | <i>0.500</i> | <i>0.6</i> | <i>0.200</i> | <i>0.7726</i> | <i>1.00</i> | <i>0.7726</i> | <i>0.137</i> | <i>0.1061</i> | <i>8.4</i> | | | |
| 11 | 15:04 | 5.55 | 0.6 | 0.700 | 0.6 | 0.280 | 0.2080 | 1.00 | 0.2080 | 0.297 | 0.0619 | 4.9 | | | |
| 12 | <i>15:05</i> | <i>5.97</i> | <i>0.6</i> | <i>0.800</i> | <i>0.6</i> | <i>0.320</i> | <i>-0.0322</i> | <i>1.00</i> | <i>-0.0322</i> | <i>0.340</i> | <i>-0.0109</i> | <i>-0.9</i> | | | |
| 13 | 15:07 | 6.40 | 0.6 | 0.800 | 0.6 | 0.320 | -0.0177 | 1.00 | -0.0177 | 0.340 | -0.0060 | -0.5 | | | |
| 14 | 15:08 | 6.82 | 0.6 | 0.800 | 0.6 | 0.320 | -0.0026 | 1.00 | -0.0026 | 0.340 | -0.0009 | -0.1 | | | |
| 15 | <i>15:09</i> | <i>7.25</i> | <i>0.6</i> | <i>0.800</i> | <i>0.6</i> | <i>0.320</i> | <i>0.0922</i> | <i>1.00</i> | <i>0.0922</i> | <i>0.340</i> | <i>0.0313</i> | <i>2.5</i> | | | |
| 16 | 15:11 | 7.67 | 0.6 | 0.750 | 0.6 | 0.300 | 0.1155 | 1.00 | 0.1155 | 0.319 | 0.0368 | 2.9 | | | |
| 17 | 15:12 | 8.10 | 0.6 | 0.750 | 0.6 | 0.300 | 0.2185 | 1.00 | 0.2185 | 0.319 | 0.0696 | 5.5 | | | |
| 18 | <i>15:13</i> | <i>8.52</i> | <i>0.6</i> | <i>0.650</i> | <i>0.6</i> | <i>0.260</i> | <i>0.0696</i> | <i>1.00</i> | <i>0.0696</i> | <i>0.276</i> | <i>0.0192</i> | <i>1.5</i> | | | |
| 19 | <i>15:15</i> | <i>8.95</i> | <i>0.6</i> | <i>0.500</i> | <i>0.6</i> | <i>0.200</i> | <i>0.0968</i> | <i>1.00</i> | <i>0.0968</i> | <i>0.212</i> | <i>0.0206</i> | <i>1.6</i> | | | |
| 20 | <i>15:16</i> | <i>9.37</i> | <i>0.6</i> | <i>0.700</i> | <i>0.6</i> | <i>0.280</i> | <i>0.1834</i> | <i>1.00</i> | <i>0.1834</i> | <i>0.297</i> | <i>0.0546</i> | <i>4.3</i> | | | |
| 21 | <i>15:17</i> | <i>9.80</i> | <i>0.6</i> | <i>0.700</i> | <i>0.6</i> | <i>0.280</i> | <i>0.1870</i> | <i>1.00</i> | <i>0.1870</i> | <i>0.297</i> | <i>0.0556</i> | <i>4.4</i> | | | |
| 22 | <i>15:19</i> | <i>10.22</i> | <i>0.6</i> | <i>0.500</i> | <i>0.6</i> | <i>0.200</i> | <i>0.1644</i> | <i>1.00</i> | <i>0.1644</i> | <i>0.212</i> | <i>0.0349</i> | <i>2.8</i> | | | |
| 23 | <i>15:20</i> | <i>10.65</i> | <i>0.6</i> | <i>0.300</i> | <i>0.6</i> | <i>0.120</i> | <i>0.2113</i> | <i>1.00</i> | <i>0.2113</i> | <i>0.127</i> | <i>0.0269</i> | <i>2.1</i> | | | |
| 24 | <i>15:22</i> | <i>11.07</i> | <i>0.6</i> | <i>0.200</i> | <i>0.6</i> | <i>0.080</i> | <i>0.1237</i> | <i>1.00</i> | <i>0.1237</i> | <i>0.085</i> | <i>0.0105</i> | <i>0.8</i> | | | |
| 25 | <i>15:22</i> | <i>11.50</i> | None | 0.100 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.1237 | 0.021 | 0.0026 | 0.2 | | | |

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File InformationFile Name
Start Date and TimeCSC104.WAD
2011/09/26 14:54:42**Site Details**Site Name
Operator(s)CSC104
DRR



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File InformationFile Name
Start Date and TimeCSC104.WAD
2011/09/26 14:54:42**Site Details**Site Name
Operator(s)CSC104
DRR**Quality Control**

| St | Loc | %Dep | Message |
|----|-------|------|----------------------------|
| 2 | 3.85 | 0.6 | High angle: 20 |
| 3 | 3.90 | 0.6 | High standard error: 0.050 |
| 5 | 4.27 | 0.6 | High standard error: 0.050 |
| 6 | 4.40 | 0.6 | High standard error: 0.058 |
| 7 | 4.60 | 0.6 | High standard error: 0.042 |
| 8 | 4.70 | 0.6 | High standard error: 0.047 |
| 10 | 5.12 | 0.6 | High standard error: 0.045 |
| 12 | 5.97 | 0.6 | High angle: 123 |
| 15 | 7.25 | 0.6 | High angle: 33 |
| 18 | 8.52 | 0.6 | High angle: 34 |
| 19 | 8.95 | 0.6 | High angle: 20 |
| 20 | 9.37 | 0.6 | High angle: 34 |
| 21 | 9.80 | 0.6 | High angle: 22 |
| 22 | 10.22 | 0.6 | High angle: 28 |
| 23 | 10.65 | 0.6 | High angle: 37 |
| 24 | 11.07 | 0.6 | High angle: 31 |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

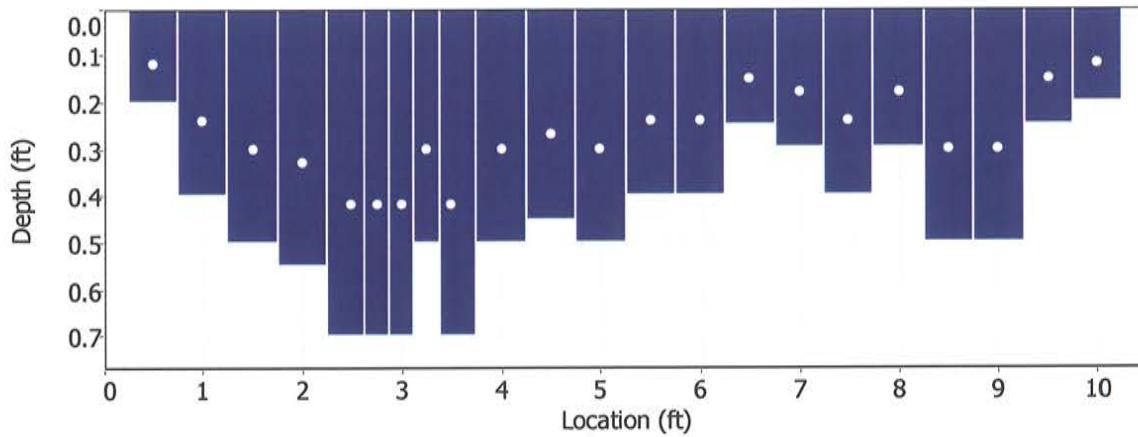
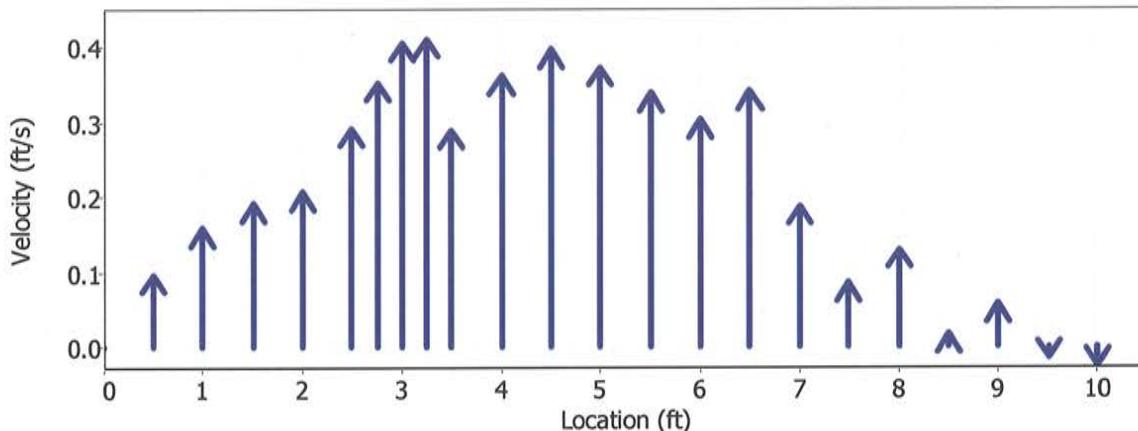
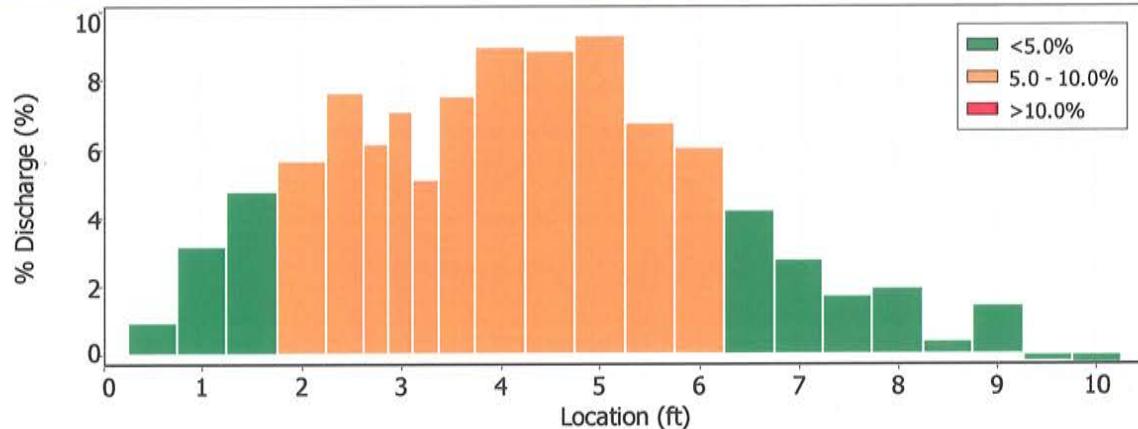
| File Information | | | | Site Details | | | | | | | | | | |
|----------------------------|--------------|------------------------------|---------------|-----------------------|-------------|--------------|----------------|-------------|----------------|--------------|----------------|-------------|--|--|
| System Information | | Units (English Units) | | Discharge Uncertainty | | | | | | | | | | |
| Sensor Type | FlowTracker | Distance | ft | Category ISO Stats | | | | | | | | | | |
| Serial # | P3514 | Velocity | ft/s | Accuracy | 1.0% | 1.0% | | | | | | | | |
| CPU Firmware Version | 3.7 | Area | ft^2 | Depth | 0.4% | 4.3% | | | | | | | | |
| Software Ver | 2.20 | Discharge | cfs | Velocity | 1.4% | 3.9% | | | | | | | | |
| Summary | | Discharge Uncertainty | | | | | | | | | | | | |
| Averaging Int. | 40 | # Stations | 24 | Category ISO Stats | | | | | | | | | | |
| Start Edge | REW | Total Width | 10.500 | Accuracy | 1.0% | 1.0% | | | | | | | | |
| Mean SNR | 33.6 dB | Total Area | 4.300 | Depth | 0.4% | 4.3% | | | | | | | | |
| Mean Temp | 58.61 °F | Mean Depth | 0.410 | Velocity | 1.4% | 3.9% | | | | | | | | |
| Disch. Equation | Mid-Section | Mean Velocity | 0.2344 | Width | 0.1% | 0.1% | | | | | | | | |
| | | Total Discharge | 1.0080 | Method | 1.9% | - | | | | | | | | |
| | | | | # Stations | 2.1% | - | | | | | | | | |
| | | | | Overall | 3.3% | 5.9% | | | | | | | | |
| Measurement Results | | | | | | | | | | | | | | |
| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q | | |
| 0 | 15:05 | 0.00 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 | | |
| 1 | <i>15:05</i> | <i>0.50</i> | <i>0.6</i> | <i>0.200</i> | <i>0.6</i> | <i>0.080</i> | <i>0.0971</i> | <i>1.00</i> | <i>0.0971</i> | <i>0.100</i> | <i>0.0097</i> | <i>1.0</i> | | |
| 2 | 15:08 | 1.00 | 0.6 | 0.400 | 0.6 | 0.160 | 0.1591 | 1.00 | 0.1591 | 0.200 | 0.0318 | 3.2 | | |
| 3 | <i>15:10</i> | <i>1.50</i> | <i>0.6</i> | <i>0.500</i> | <i>0.6</i> | <i>0.200</i> | <i>0.1919</i> | <i>1.00</i> | <i>0.1919</i> | <i>0.250</i> | <i>0.0480</i> | <i>4.8</i> | | |
| 4 | 15:11 | 2.00 | 0.6 | 0.550 | 0.6 | 0.220 | 0.2073 | 1.00 | 0.2073 | 0.275 | 0.0570 | 5.7 | | |
| 5 | 15:13 | 2.50 | 0.6 | 0.700 | 0.6 | 0.280 | 0.2923 | 1.00 | 0.2923 | 0.263 | 0.0767 | 7.6 | | |
| 6 | 15:44 | 2.75 | 0.6 | 0.700 | 0.6 | 0.280 | 0.3530 | 1.00 | 0.3530 | 0.175 | 0.0618 | 6.1 | | |
| 7 | 15:14 | 3.00 | 0.6 | 0.700 | 0.6 | 0.280 | 0.4068 | 1.00 | 0.4068 | 0.175 | 0.0712 | 7.1 | | |
| 8 | 15:47 | 3.25 | 0.6 | 0.500 | 0.6 | 0.200 | 0.4114 | 1.00 | 0.4114 | 0.125 | 0.0514 | 5.1 | | |
| 9 | 15:15 | 3.50 | 0.6 | 0.700 | 0.6 | 0.280 | 0.2897 | 1.00 | 0.2897 | 0.263 | 0.0761 | 7.5 | | |
| 10 | 15:17 | 4.00 | 0.6 | 0.500 | 0.6 | 0.200 | 0.3615 | 1.00 | 0.3615 | 0.250 | 0.0904 | 9.0 | | |
| 11 | 15:18 | 4.50 | 0.6 | 0.450 | 0.6 | 0.180 | 0.3976 | 1.00 | 0.3976 | 0.225 | 0.0895 | 8.9 | | |
| 12 | 15:19 | 5.00 | 0.6 | 0.500 | 0.6 | 0.200 | 0.3740 | 1.00 | 0.3740 | 0.250 | 0.0935 | 9.3 | | |
| 13 | 15:20 | 5.50 | 0.6 | 0.400 | 0.6 | 0.160 | 0.3396 | 1.00 | 0.3396 | 0.200 | 0.0679 | 6.7 | | |
| 14 | 15:23 | 6.00 | 0.6 | 0.400 | 0.6 | 0.160 | 0.3041 | 1.00 | 0.3041 | 0.200 | 0.0608 | 6.0 | | |
| 15 | 15:25 | 6.50 | 0.6 | 0.250 | 0.6 | 0.100 | 0.3412 | 1.00 | 0.3412 | 0.125 | 0.0427 | 4.2 | | |
| 16 | 15:26 | 7.00 | 0.6 | 0.300 | 0.6 | 0.120 | 0.1886 | 1.00 | 0.1886 | 0.150 | 0.0283 | 2.8 | | |
| 17 | 15:28 | 7.50 | 0.6 | 0.400 | 0.6 | 0.160 | 0.0860 | 1.00 | 0.0860 | 0.200 | 0.0172 | 1.7 | | |
| 18 | <i>15:35</i> | <i>8.00</i> | <i>0.6</i> | <i>0.300</i> | <i>0.6</i> | <i>0.120</i> | <i>0.1302</i> | <i>1.00</i> | <i>0.1302</i> | <i>0.150</i> | <i>0.0195</i> | <i>1.9</i> | | |
| 19 | 15:36 | 8.50 | 0.6 | 0.500 | 0.6 | 0.200 | 0.0174 | 1.00 | 0.0174 | 0.250 | 0.0043 | 0.4 | | |
| 20 | <i>15:38</i> | <i>9.00</i> | <i>0.6</i> | <i>0.500</i> | <i>0.6</i> | <i>0.200</i> | <i>0.0584</i> | <i>1.00</i> | <i>0.0584</i> | <i>0.250</i> | <i>0.0146</i> | <i>1.4</i> | | |
| 21 | 15:39 | 9.50 | 0.6 | 0.250 | 0.6 | 0.100 | -0.0148 | 1.00 | -0.0148 | 0.125 | -0.0018 | -0.2 | | |
| 22 | <i>15:40</i> | <i>10.00</i> | <i>0.6</i> | <i>0.200</i> | <i>0.6</i> | <i>0.080</i> | <i>-0.0259</i> | <i>1.00</i> | <i>-0.0259</i> | <i>0.100</i> | <i>-0.0026</i> | <i>-0.3</i> | | |
| 23 | 15:40 | 10.50 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 | | |

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File InformationFile Name
Start Date and TimeCSC104A.WAD
2011/09/26 15:05:48**Site Details**Site Name
Operator(s)CSC104A
JW



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

File Name CSC104A.WAD
Start Date and Time 2011/09/26 15:05:48

Site Details

Site Name CSC104A
Operator(s) JW

Quality Control

| St | Loc | %Dep | Message |
|----|-------|------|-----------------|
| 1 | 0.50 | 0.6 | High angle: -42 |
| 3 | 1.50 | 0.6 | High angle: -21 |
| 18 | 8.00 | 0.6 | High angle: 22 |
| 20 | 9.00 | 0.6 | High angle: 52 |
| 22 | 10.00 | 0.6 | High angle: 133 |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

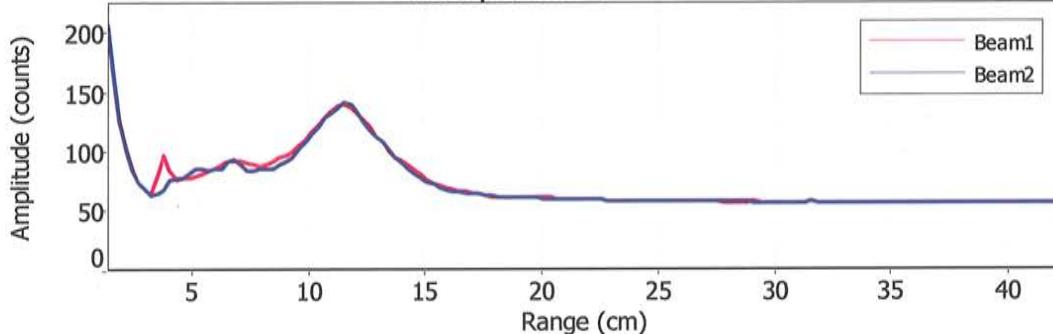
File Name CSC104A.WAD
Start Date and Time 2011/09/26 15:05:48

Site Details

Site Name CSC104A
Operator(s) JW

Automatic Quality Control Test (BeamCheck)

Mon Sep 26 15:04:19 MDT 2011



- Noise level check - Pass
- SNR check - Pass
- Peak location check - Pass
- Peak shape check - Pass



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

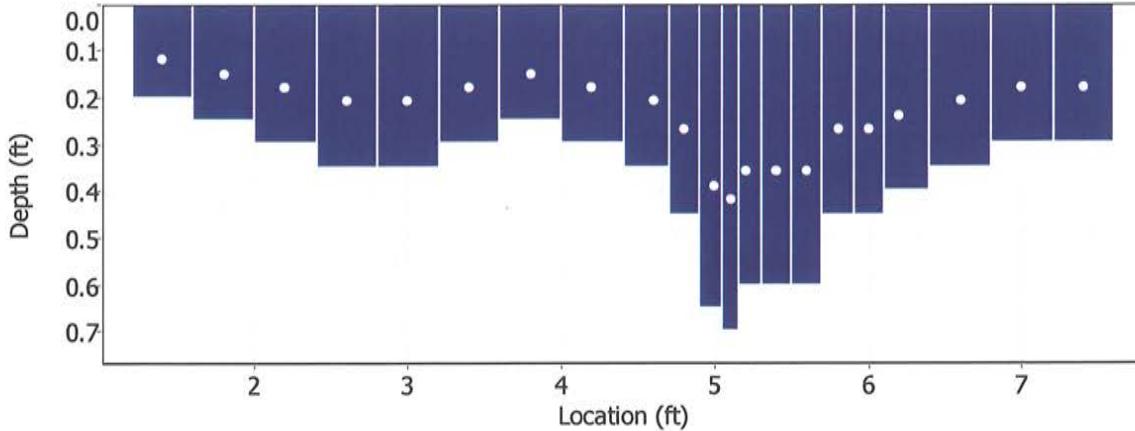
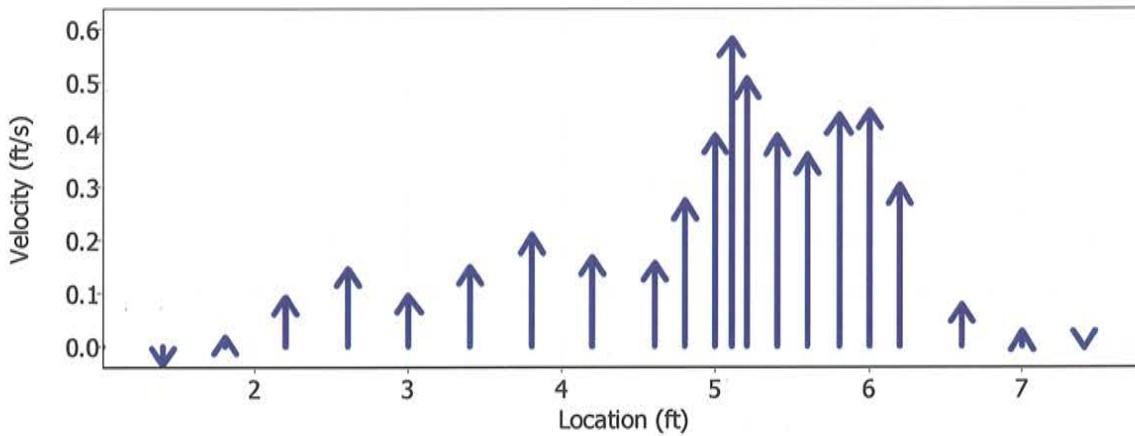
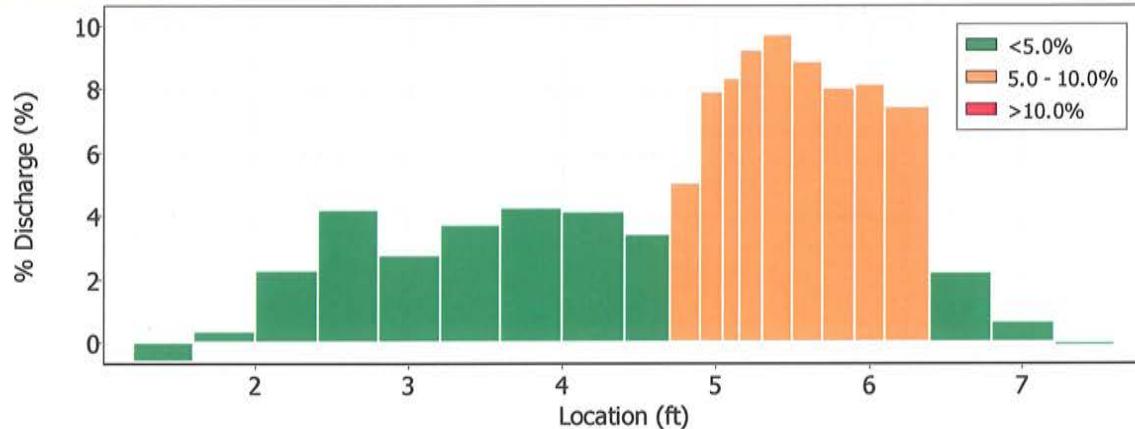
| File Information | | | | Site Details | | | | | | | | |
|----------------------------|---------------------|------------------------|---------------|------------------------------|--|--------------|----------------|------------------------------|----------------|--------------|----------------|-------------|
| File Name | CSC105.WAD | | | Site Name | CSC105 <th data-kind="ghost"></th> <th data-kind="ghost"></th> <th>Operator(s)</th> <td data-cs="3" data-kind="parent">RB</td> <td data-kind="ghost"></td> <td data-kind="ghost"></td> | | | Operator(s) | RB | | | |
| Start Date and Time | 2011/09/26 14:57:16 | | | Operator(s) | RB | | | | | | | |
| System Information | | | | Units (English Units) | | | | Discharge Uncertainty | | | | |
| Sensor Type | FlowTracker | Distance | ft | Accuracy | 1.0% | 1.0% | | Category | ISO | Stats | | |
| Serial # | P3533 | Velocity | ft/s | Depth | 0.4% | 1.9% | | | | | | |
| CPU Firmware Version | 3.7 | Area | ft^2 | Velocity | 2.0% | 4.7% | | | | | | |
| Software Ver | 2.20 | Discharge | cfs | Width | 0.1% | 0.1% | | | | | | |
| Summary | | | | Method | 2.0% | - | | | | | | |
| Averaging Int. | 40 | # Stations | 23 | # Stations | 2.2% | - | | | | | | |
| Start Edge | REW | Total Width | 6.799 | Overall | 3.8% | 5.2% | | | | | | |
| Mean SNR | 40.9 dB | Total Area | 2.292 | | | | | | | | | |
| Mean Temp | 48.65 °F | Mean Depth | 0.337 | | | | | | | | | |
| Disch. Equation | Mid-Section | Mean Velocity | 0.2137 | | | | | | | | | |
| | | Total Discharge | 0.4899 | | | | | | | | | |
| Measurement Results | | | | | | | | | | | | |
| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
| 0 | 14:57 | 1.00 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| 1 | <i>14:57</i> | <i>1.40</i> | <i>0.6</i> | <i>0.200</i> | <i>0.6</i> | <i>0.080</i> | <i>-0.0387</i> | <i>1.00</i> | <i>-0.0387</i> | <i>0.080</i> | <i>-0.0031</i> | <i>-0.6</i> |
| 2 | 14:58 | 1.80 | 0.6 | 0.250 | 0.6 | 0.100 | 0.0180 | 1.00 | 0.0180 | 0.100 | 0.0018 | 0.4 |
| 3 | 14:59 | 2.20 | 0.6 | 0.300 | 0.6 | 0.120 | 0.0935 | 1.00 | 0.0935 | 0.120 | 0.0112 | 2.3 |
| 4 | 15:00 | 2.60 | 0.6 | 0.350 | 0.6 | 0.140 | 0.1476 | 1.00 | 0.1476 | 0.140 | 0.0207 | 4.2 |
| 5 | <i>15:01</i> | <i>3.00</i> | <i>0.6</i> | <i>0.350</i> | <i>0.6</i> | <i>0.140</i> | <i>0.0968</i> | <i>1.00</i> | <i>0.0968</i> | <i>0.140</i> | <i>0.0136</i> | <i>2.8</i> |
| 6 | <i>15:02</i> | <i>3.40</i> | <i>0.6</i> | <i>0.300</i> | <i>0.6</i> | <i>0.120</i> | <i>0.1509</i> | <i>1.00</i> | <i>0.1509</i> | <i>0.120</i> | <i>0.0181</i> | <i>3.7</i> |
| 7 | <i>15:04</i> | <i>3.80</i> | <i>0.6</i> | <i>0.250</i> | <i>0.6</i> | <i>0.100</i> | <i>0.2096</i> | <i>1.00</i> | <i>0.2096</i> | <i>0.100</i> | <i>0.0210</i> | <i>4.3</i> |
| 8 | <i>15:05</i> | <i>4.20</i> | <i>0.6</i> | <i>0.300</i> | <i>0.6</i> | <i>0.120</i> | <i>0.1683</i> | <i>1.00</i> | <i>0.1683</i> | <i>0.120</i> | <i>0.0202</i> | <i>4.1</i> |
| 9 | <i>15:06</i> | <i>4.60</i> | <i>0.6</i> | <i>0.350</i> | <i>0.6</i> | <i>0.140</i> | <i>0.1581</i> | <i>1.00</i> | <i>0.1581</i> | <i>0.105</i> | <i>0.0166</i> | <i>3.4</i> |
| 10 | 15:20 | 4.80 | 0.6 | 0.450 | 0.6 | 0.180 | 0.2749 | 1.00 | 0.2749 | 0.090 | 0.0247 | 5.1 |
| 11 | 15:07 | 5.00 | 0.6 | 0.650 | 0.6 | 0.260 | 0.3983 | 1.00 | 0.3983 | 0.098 | 0.0389 | 7.9 |
| 12 | <i>15:21</i> | <i>5.10</i> | <i>0.6</i> | <i>0.700</i> | <i>0.6</i> | <i>0.280</i> | <i>0.5820</i> | <i>1.00</i> | <i>0.5820</i> | <i>0.070</i> | <i>0.0409</i> | <i>8.4</i> |
| 13 | 15:16 | 5.20 | 0.6 | 0.600 | 0.6 | 0.240 | 0.5043 | 1.00 | 0.5043 | 0.090 | 0.0453 | 9.2 |
| 14 | 15:08 | 5.40 | 0.6 | 0.600 | 0.6 | 0.240 | 0.3970 | 1.00 | 0.3970 | 0.120 | 0.0476 | 9.7 |
| 15 | 15:17 | 5.60 | 0.6 | 0.600 | 0.6 | 0.240 | 0.3615 | 1.00 | 0.3615 | 0.120 | 0.0434 | 8.9 |
| 16 | <i>15:10</i> | <i>5.80</i> | <i>0.6</i> | <i>0.450</i> | <i>0.6</i> | <i>0.180</i> | <i>0.4364</i> | <i>1.00</i> | <i>0.4364</i> | <i>0.090</i> | <i>0.0393</i> | <i>8.0</i> |
| 17 | 15:18 | 6.00 | 0.6 | 0.450 | 0.6 | 0.180 | 0.4449 | 1.00 | 0.4449 | 0.090 | 0.0400 | 8.2 |
| 18 | 15:11 | 6.20 | 0.6 | 0.400 | 0.6 | 0.160 | 0.3028 | 1.00 | 0.3028 | 0.120 | 0.0363 | 7.4 |
| 19 | 15:12 | 6.60 | 0.6 | 0.350 | 0.6 | 0.140 | 0.0784 | 1.00 | 0.0784 | 0.140 | 0.0110 | 2.2 |
| 20 | 15:13 | 7.00 | 0.6 | 0.300 | 0.6 | 0.120 | 0.0269 | 1.00 | 0.0269 | 0.120 | 0.0032 | 0.7 |
| 21 | 15:14 | 7.40 | 0.6 | 0.300 | 0.6 | 0.120 | -0.0062 | 1.00 | -0.0062 | 0.120 | -0.0007 | -0.2 |
| 22 | 15:14 | 7.80 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File InformationFile Name
Start Date and TimeCSC105.WAD
2011/09/26 14:57:16**Site Details**Site Name
Operator(s)CSC105
RB



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File InformationFile Name
Start Date and TimeCSC105.WAD
2011/09/26 14:57:16**Site Details**Site Name
Operator(s)CSC105
RB**Quality Control**

| St | Loc | %Dep | Message |
|----|------|------|----------------------------|
| 1 | 1.40 | 0.6 | High angle: 176 |
| 5 | 3.00 | 0.6 | High angle: -22 |
| 6 | 3.40 | 0.6 | High angle: -31 |
| 7 | 3.80 | 0.6 | High angle: -40 |
| 8 | 4.20 | 0.6 | High angle: -26 |
| 9 | 4.60 | 0.6 | High angle: -26 |
| 12 | 5.10 | 0.6 | High standard error: 0.033 |
| 16 | 5.80 | 0.6 | High standard error: 0.035 |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

| | |
|---------------------|---------------------|
| File Name | CSC106.WAD |
| Start Date and Time | 2011/09/27 17:08:00 |

Site Details

| | |
|-------------|--------|
| Site Name | CSC106 |
| Operator(s) | RB |

System Information

| | |
|----------------------|-------------|
| Sensor Type | FlowTracker |
| Serial # | P3533 |
| CPU Firmware Version | 3.7 |
| Software Ver | 2.20 |

Units (English Units)

| | |
|-----------|------|
| Distance | ft |
| Velocity | ft/s |
| Area | ft^2 |
| Discharge | cfs |

Discharge Uncertainty

| Category | ISO | Stats |
|----------------|-------------|-------------|
| Accuracy | 1.0% | 1.0% |
| Depth | 0.4% | 3.2% |
| Velocity | 1.2% | 8.1% |
| Width | 0.1% | 0.1% |
| Method | 1.9% | - |
| # Stations | 2.5% | - |
| Overall | 3.6% | 8.8% |

Summary

| | | | |
|-----------------|-------------|------------------------|---------------|
| Averaging Int. | 40 | # Stations | 20 |
| Start Edge | REW | Total Width | 5.999 |
| Mean SNR | 32.6 dB | Total Area | 1.863 |
| Mean Temp | 48.96 °F | Mean Depth | 0.311 |
| Disch. Equation | Mid-Section | Mean Velocity | 0.2871 |
| | | Total Discharge | 0.5350 |

Measurement Results

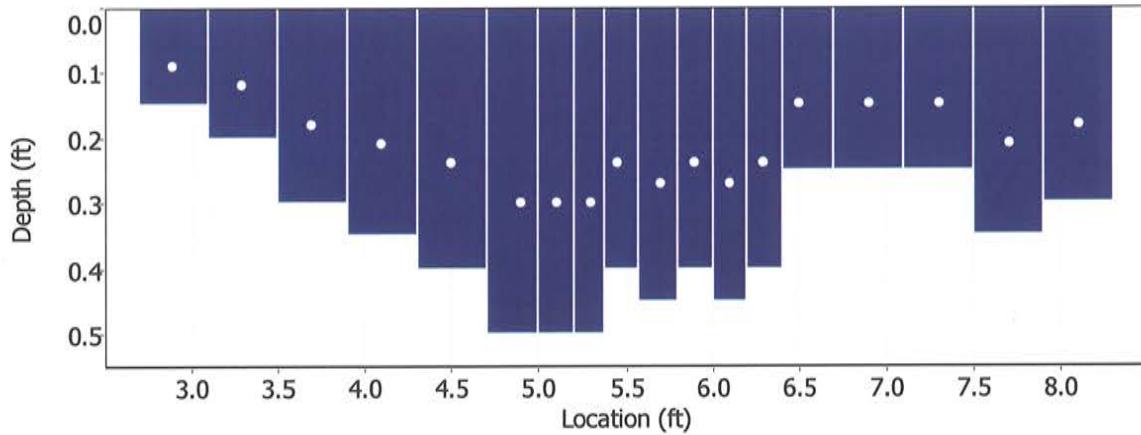
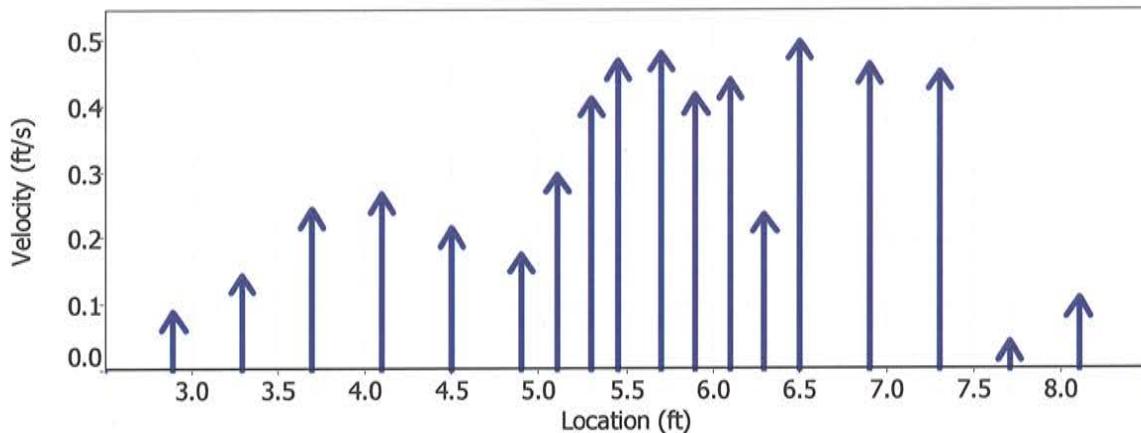
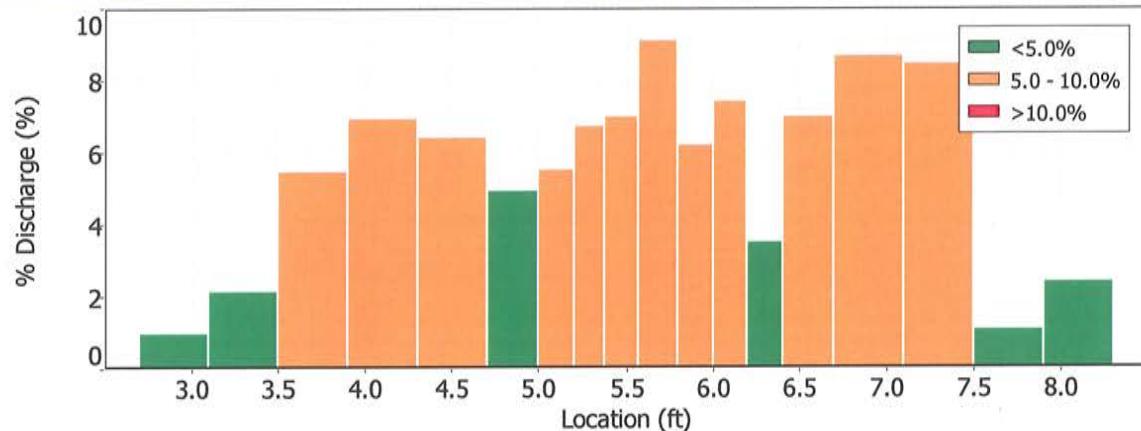
| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
|----|--------------|-------------|------------|--------------|------------|--------------|---------------|-------------|---------------|--------------|---------------|------------|
| 0 | 17:07 | 2.50 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| 1 | 17:07 | 2.90 | 0.6 | 0.150 | 0.6 | 0.060 | 0.0873 | 1.00 | 0.0873 | 0.060 | 0.0052 | 1.0 |
| 2 | 17:09 | 3.30 | 0.6 | 0.200 | 0.6 | 0.080 | 0.1434 | 1.00 | 0.1434 | 0.080 | 0.0115 | 2.1 |
| 3 | 17:10 | 3.70 | 0.6 | 0.300 | 0.6 | 0.120 | 0.2438 | 1.00 | 0.2438 | 0.120 | 0.0292 | 5.5 |
| 4 | 17:11 | 4.10 | 0.6 | 0.350 | 0.6 | 0.140 | 0.2657 | 1.00 | 0.2657 | 0.140 | 0.0372 | 7.0 |
| 5 | 17:12 | 4.50 | 0.6 | 0.400 | 0.6 | 0.160 | 0.2142 | 1.00 | 0.2142 | 0.160 | 0.0343 | 6.4 |
| 6 | 17:13 | 4.90 | 0.6 | 0.500 | 0.6 | 0.200 | 0.1759 | 1.00 | 0.1759 | 0.150 | 0.0264 | 4.9 |
| 7 | <i>17:34</i> | <i>5.10</i> | <i>0.6</i> | <i>0.500</i> | <i>0.6</i> | <i>0.200</i> | <i>0.2963</i> | <i>1.00</i> | <i>0.2963</i> | <i>0.100</i> | <i>0.0296</i> | <i>5.5</i> |
| 8 | 17:14 | 5.30 | 0.6 | 0.500 | 0.6 | 0.200 | 0.4114 | 1.00 | 0.4114 | 0.088 | 0.0360 | 6.7 |
| 9 | 17:29 | 5.45 | 0.6 | 0.400 | 0.6 | 0.160 | 0.4688 | 1.00 | 0.4688 | 0.080 | 0.0375 | 7.0 |
| 10 | 17:15 | 5.70 | 0.6 | 0.450 | 0.6 | 0.180 | 0.4816 | 1.00 | 0.4816 | 0.101 | 0.0488 | 9.1 |
| 11 | 17:31 | 5.90 | 0.6 | 0.400 | 0.6 | 0.160 | 0.4160 | 1.00 | 0.4160 | 0.080 | 0.0333 | 6.2 |
| 12 | 17:16 | 6.10 | 0.6 | 0.450 | 0.6 | 0.180 | 0.4396 | 1.00 | 0.4396 | 0.090 | 0.0396 | 7.4 |
| 13 | <i>17:33</i> | <i>6.30</i> | <i>0.6</i> | <i>0.400</i> | <i>0.6</i> | <i>0.160</i> | <i>0.2356</i> | <i>1.00</i> | <i>0.2356</i> | <i>0.080</i> | <i>0.0188</i> | <i>3.5</i> |
| 14 | 17:18 | 6.50 | 0.6 | 0.250 | 0.6 | 0.100 | 0.4987 | 1.00 | 0.4987 | 0.075 | 0.0374 | 7.0 |
| 15 | 17:19 | 6.90 | 0.6 | 0.250 | 0.6 | 0.100 | 0.4633 | 1.00 | 0.4633 | 0.100 | 0.0463 | 8.7 |
| 16 | 17:21 | 7.30 | 0.6 | 0.250 | 0.6 | 0.100 | 0.4528 | 1.00 | 0.4528 | 0.100 | 0.0453 | 8.5 |
| 17 | 17:25 | 7.70 | 0.6 | 0.350 | 0.6 | 0.140 | 0.0417 | 1.00 | 0.0417 | 0.140 | 0.0058 | 1.1 |
| 18 | <i>17:27</i> | <i>8.10</i> | <i>0.6</i> | <i>0.300</i> | <i>0.6</i> | <i>0.120</i> | <i>0.1073</i> | <i>1.00</i> | <i>0.1073</i> | <i>0.120</i> | <i>0.0129</i> | <i>2.4</i> |
| 19 | 17:27 | 8.50 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |

Rows in Italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File InformationFile Name
Start Date and TimeCSC106.WAD
2011/09/27 17:08:00**Site Details**Site Name
Operator(s)CSC106
RB



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

File Name CSC106.WAD
Start Date and Time 2011/09/27 17:08:00

Site Details

Site Name CSC106
Operator(s) RB

Quality Control

| St | Loc | %Dep | Message |
|----|------|------|-----------------|
| 7 | 5.10 | 0.6 | High angle: -29 |
| 13 | 6.30 | 0.6 | High angle: -28 |
| 18 | 8.10 | 0.6 | High angle: -23 |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

File Name CSC108.WAD
 Start Date and Time 2011/09/27 17:16:14

Site Details

Site Name DW
 Operator(s)

System Information

Sensor Type FlowTracker
 Serial # P3512
 CPU Firmware Version 3.7
 Software Ver 2.20

Units (English Units)

| | |
|-----------|-----------------|
| Distance | ft |
| Velocity | ft/s |
| Area | ft ² |
| Discharge | cfs |

Discharge Uncertainty

| Category | ISO | Stats |
|----------------|-------------|-------------|
| Accuracy | 1.0% | 1.0% |
| Depth | 0.4% | 6.9% |
| Velocity | 1.3% | 6.1% |
| Width | 0.1% | 0.1% |
| Method | 2.0% | - |
| # Stations | 2.3% | - |
| Overall | 3.5% | 9.3% |

Summary

| | | | |
|-----------------|-------------|------------------------|---------------|
| Averaging Int. | 40 | # Stations | 22 |
| Start Edge | REW | Total Width | 2.399 |
| Mean SNR | 32.8 dB | Total Area | 0.584 |
| Mean Temp | 45.83 °F | Mean Depth | 0.243 |
| Disch. Equation | Mid-Section | Mean Velocity | 0.2835 |
| | | Total Discharge | 0.1655 |

Measurement Results

| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
|----|-------|------|--------|-------|------|-------|---------|----------|---------|-------|---------|------|
| 0 | 17:16 | 1.70 | None | 0.200 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.2457 | 0.015 | 0.0037 | 2.2 |
| 1 | 17:16 | 1.85 | 0.6 | 0.200 | 0.6 | 0.080 | 0.2457 | 1.00 | 0.2457 | 0.030 | 0.0074 | 4.5 |
| 2 | 17:17 | 2.00 | 0.6 | 0.200 | 0.6 | 0.080 | 0.2080 | 1.00 | 0.2080 | 0.030 | 0.0062 | 3.8 |
| 3 | 17:19 | 2.15 | 0.6 | 0.210 | 0.6 | 0.084 | 0.4623 | 1.00 | 0.4623 | 0.031 | 0.0146 | 8.8 |
| 4 | 17:21 | 2.30 | 0.6 | 0.230 | 0.6 | 0.092 | 0.2953 | 1.00 | 0.2953 | 0.034 | 0.0102 | 6.2 |
| 5 | 17:22 | 2.45 | 0.6 | 0.230 | 0.6 | 0.092 | 0.4613 | 1.00 | 0.4613 | 0.023 | 0.0106 | 6.4 |
| 6 | 17:45 | 2.50 | 0.6 | 0.000 | 0.6 | 0.112 | 0.4843 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| 7 | 17:23 | 2.60 | 0.6 | 0.250 | 0.6 | 0.100 | 0.5587 | 1.00 | 0.5587 | 0.025 | 0.0140 | 8.4 |
| 8 | 17:39 | 2.70 | 0.6 | 0.230 | 0.6 | 0.092 | 0.5679 | 1.00 | 0.5679 | 0.017 | 0.0098 | 5.9 |
| 9 | 17:24 | 2.75 | 0.6 | 0.270 | 0.6 | 0.108 | 0.6509 | 1.00 | 0.6509 | 0.018 | 0.0114 | 6.9 |
| 10 | 17:41 | 2.83 | 0.6 | 0.230 | 0.6 | 0.092 | 0.6194 | 1.00 | 0.6194 | 0.017 | 0.0107 | 6.5 |
| 11 | 17:25 | 2.90 | 0.6 | 0.270 | 0.6 | 0.108 | 0.6670 | 1.00 | 0.6670 | 0.023 | 0.0153 | 9.2 |
| 12 | 17:42 | 3.00 | 0.6 | 0.250 | 0.6 | 0.100 | 0.6040 | 1.00 | 0.6040 | 0.019 | 0.0113 | 6.8 |
| 13 | 17:26 | 3.05 | 0.6 | 0.280 | 0.6 | 0.112 | 0.6368 | 1.00 | 0.6368 | 0.014 | 0.0089 | 5.4 |
| 14 | 17:43 | 3.10 | 0.6 | 0.250 | 0.6 | 0.100 | 0.4911 | 1.00 | 0.4911 | 0.019 | 0.0092 | 5.6 |
| 15 | 17:28 | 3.20 | 0.6 | 0.300 | 0.6 | 0.120 | 0.4291 | 1.00 | 0.4291 | 0.037 | 0.0160 | 9.7 |
| 16 | 17:28 | 3.35 | 0.6 | 0.300 | 0.6 | 0.120 | 0.1476 | 1.00 | 0.1476 | 0.045 | 0.0066 | 4.0 |
| 17 | 17:30 | 3.50 | 0.6 | 0.330 | 0.6 | 0.132 | 0.0141 | 1.00 | 0.0141 | 0.049 | 0.0007 | 0.4 |
| 18 | 17:32 | 3.65 | 0.6 | 0.330 | 0.6 | 0.132 | 0.0121 | 1.00 | 0.0121 | 0.049 | 0.0006 | 0.4 |
| 19 | 17:33 | 3.80 | 0.6 | 0.300 | 0.6 | 0.120 | -0.0384 | 1.00 | -0.0384 | 0.045 | -0.0017 | -1.0 |
| 20 | 17:35 | 3.95 | 0.6 | 0.280 | 0.6 | 0.112 | -0.0007 | 1.00 | -0.0007 | 0.042 | 0.0000 | 0.0 |
| 21 | 17:35 | 4.10 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.

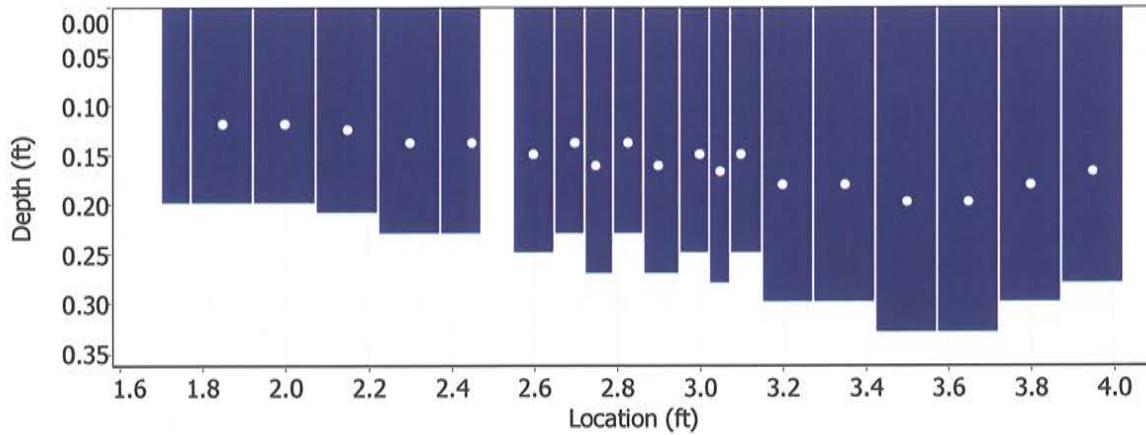
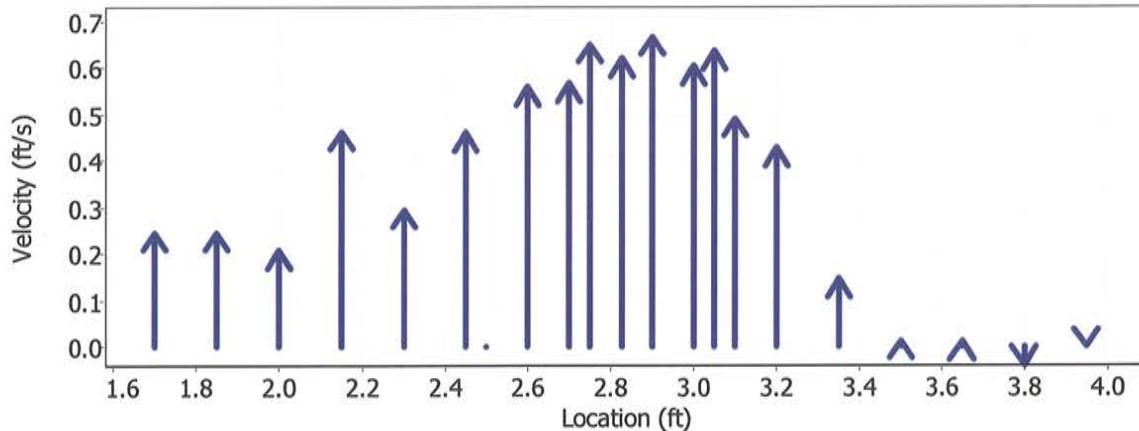
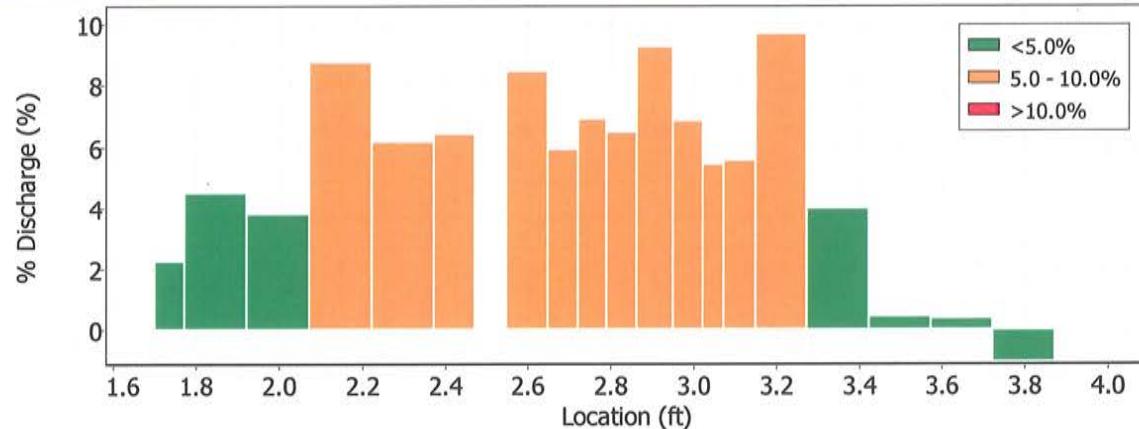


Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File InformationFile Name
Start Date and TimeCSC108.WAD
2011/09/27 17:16:14**Site Details**Site Name
Operator(s)

DW





Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

File Name CSC108.WAD
Start Date and Time 2011/09/27 17:16:14

Site Details

Site Name Operator(s) DW

Quality Control

| St | Loc | %Dep | Message |
|----|------|------|---|
| 19 | 3.80 | 0.6 | High angle: -137 |
| | | 0.6 | Boundary QC is Poor; possible boundary interference |
| 20 | 3.95 | 0.6 | High differences in beam SNR: 63.2,51.5 |
| | | 0.6 | SNR (57.4) is different from typical SNR (32.8) |
| | | 0.6 | Boundary QC is Good; possible boundary interference |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

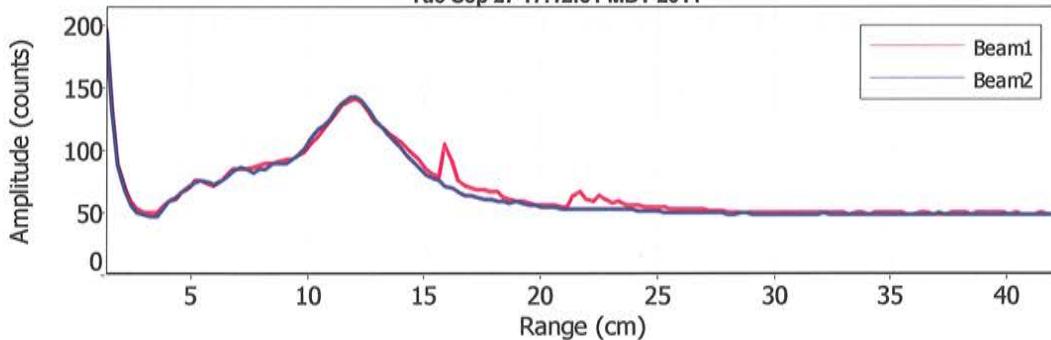
File Name CSC108.WAD
Start Date and Time 2011/09/27 17:16:14

Site Details

Site Name DW
Operator(s)

Automatic Quality Control Test (BeamCheck)

Tue Sep 27 17:12:51 MDT 2011



- Noise level check - Pass
- SNR check - Pass
- Peak location check - Pass
- Peak shape check - Pass



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

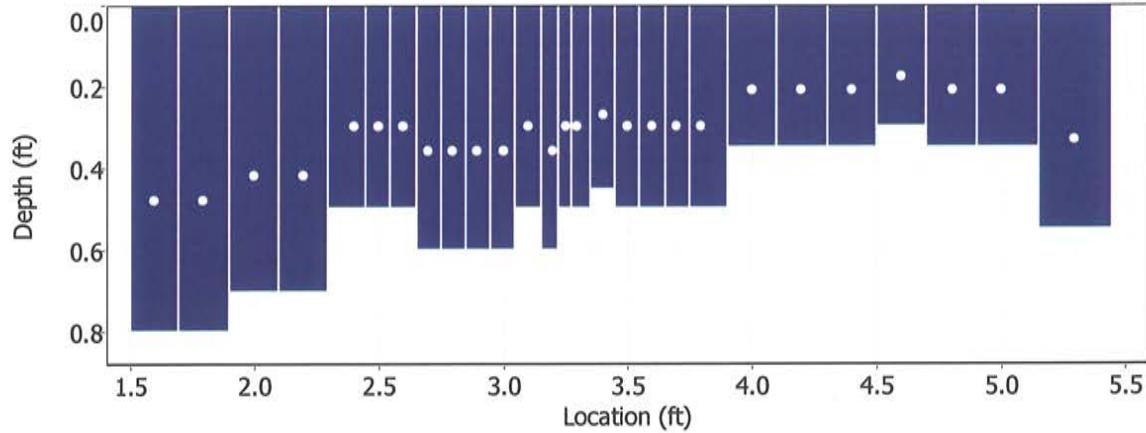
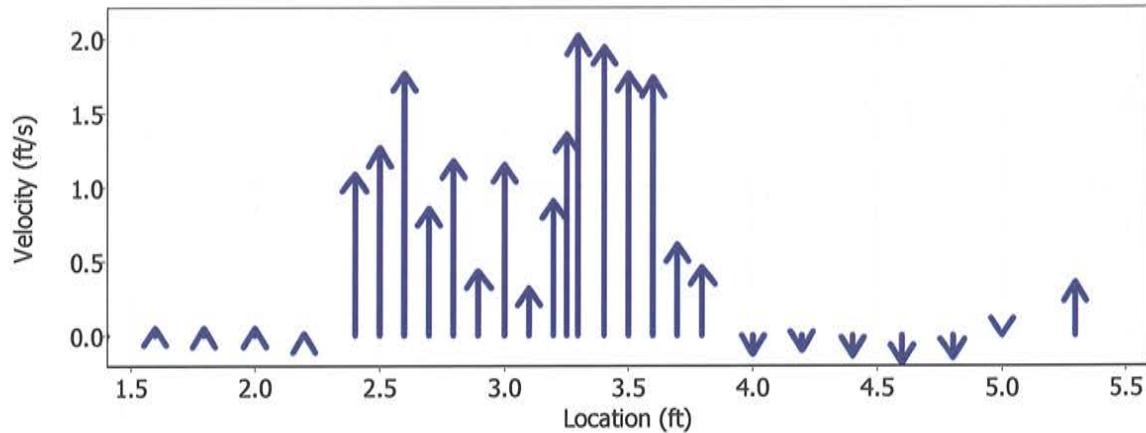
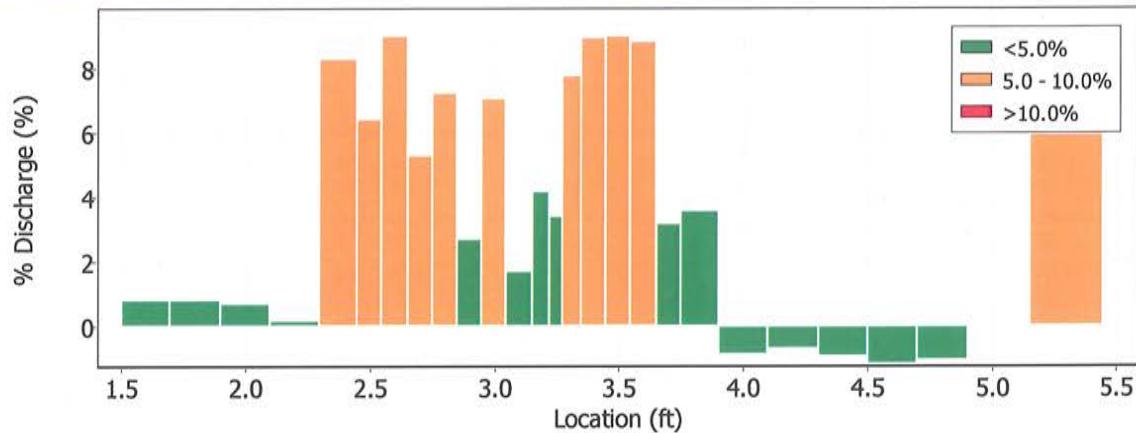
| File Information | | | | Site Details | | | | | | | | |
|----------------------|--------------|-----------------|---------------|-----------------------|------------|--------------|----------------|--------------|----------------|--------------|----------------|-------------|
| System Information | | Units | | (English Units) | | | | | | | | |
| Sensor Type | FlowTracker | Distance | ft | | | | | | | | | |
| Serial # | P3533 | Velocity | ft/s | | | | | | | | | |
| CPU Firmware Version | 3.7 | Area | ft^2 | | | | | | | | | |
| Software Ver | 2.20 | Discharge | cfs | | | | | | | | | |
| Summary | | | | Discharge Uncertainty | | | | | | | | |
| Averaging Int. | 40 | # Stations | 29 | Category | | | | | | | | |
| Start Edge | REW | Total Width | 4.198 | ISO | | Stats | | | | | | |
| Mean SNR | 42.1 dB | Total Area | 2.034 | Accuracy | | 1.0% | | 1.0% | | | | |
| Mean Temp | 57.88 °F | Mean Depth | 0.485 | Depth | | 0.4% | | 2.3% | | | | |
| Disch. Equation | Mid-Section | Mean Velocity | 0.4823 | Velocity | | 2.3% | | 14.9% | | | | |
| | | Total Discharge | 0.9813 | Width | | 0.1% | | 0.1% | | | | |
| | | | | Method | | 2.0% | | - | | | | |
| | | | | # Stations | | 1.8% | | - | | | | |
| | | | | Overall | | 3.7% | | 15.1% | | | | |
| Measurement Results | | | | | | | | | | | | |
| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
| 0 | 16:46 | 1.40 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| 1 | <i>16:46</i> | <i>1.60</i> | <i>0.6</i> | <i>0.800</i> | <i>0.6</i> | <i>0.320</i> | <i>0.0505</i> | <i>1.00</i> | <i>0.0505</i> | <i>0.160</i> | <i>0.0081</i> | <i>0.8</i> |
| 2 | <i>16:47</i> | <i>1.80</i> | <i>0.6</i> | <i>0.800</i> | <i>0.6</i> | <i>0.320</i> | <i>0.0489</i> | <i>1.00</i> | <i>0.0489</i> | <i>0.160</i> | <i>0.0078</i> | <i>0.8</i> |
| 3 | <i>16:49</i> | <i>2.00</i> | <i>0.6</i> | <i>0.700</i> | <i>0.6</i> | <i>0.280</i> | <i>0.0456</i> | <i>1.00</i> | <i>0.0456</i> | <i>0.140</i> | <i>0.0064</i> | <i>0.7</i> |
| 4 | 16:50 | 2.20 | 0.6 | 0.700 | 0.6 | 0.280 | 0.0115 | 1.00 | 0.0115 | 0.140 | 0.0016 | 0.2 |
| 5 | 16:51 | 2.40 | 0.6 | 0.500 | 0.6 | 0.200 | 1.0899 | 1.00 | 1.0899 | 0.075 | 0.0816 | 8.3 |
| 6 | 17:09 | 2.50 | 0.6 | 0.500 | 0.6 | 0.200 | 1.2612 | 1.00 | 1.2612 | 0.050 | 0.0631 | 6.4 |
| 7 | 16:52 | 2.60 | 0.6 | 0.500 | 0.6 | 0.200 | 1.7661 | 1.00 | 1.7661 | 0.050 | 0.0884 | 9.0 |
| 8 | 17:11 | 2.70 | 0.6 | 0.600 | 0.6 | 0.240 | 0.8602 | 1.00 | 0.8602 | 0.060 | 0.0517 | 5.3 |
| 9 | <i>16:53</i> | <i>2.80</i> | <i>0.6</i> | <i>0.600</i> | <i>0.6</i> | <i>0.240</i> | <i>1.1791</i> | <i>1.00</i> | <i>1.1791</i> | <i>0.060</i> | <i>0.0707</i> | <i>7.2</i> |
| 10 | 17:12 | 2.90 | 0.6 | 0.600 | 0.6 | 0.240 | 0.4350 | 1.00 | 0.4350 | 0.060 | 0.0261 | 2.7 |
| 11 | <i>16:54</i> | <i>3.00</i> | <i>0.6</i> | <i>0.600</i> | <i>0.6</i> | <i>0.240</i> | <i>1.1562</i> | <i>1.00</i> | <i>1.1562</i> | <i>0.060</i> | <i>0.0694</i> | <i>7.1</i> |
| 12 | <i>17:14</i> | <i>3.10</i> | <i>0.6</i> | <i>0.500</i> | <i>0.6</i> | <i>0.200</i> | <i>0.3251</i> | <i>1.00</i> | <i>0.3251</i> | <i>0.050</i> | <i>0.0163</i> | <i>1.7</i> |
| 13 | <i>16:55</i> | <i>3.20</i> | <i>0.6</i> | <i>0.600</i> | <i>0.6</i> | <i>0.240</i> | <i>0.9114</i> | <i>1.00</i> | <i>0.9114</i> | <i>0.045</i> | <i>0.0410</i> | <i>4.2</i> |
| 14 | 17:21 | 3.25 | 0.6 | 0.500 | 0.6 | 0.200 | 1.3553 | 1.00 | 1.3553 | 0.025 | 0.0335 | 3.4 |
| 15 | 17:19 | 3.30 | 0.6 | 0.500 | 0.6 | 0.200 | 2.0171 | 1.00 | 2.0171 | 0.038 | 0.0763 | 7.8 |
| 16 | 16:56 | 3.40 | 0.6 | 0.450 | 0.6 | 0.180 | 1.9498 | 1.00 | 1.9498 | 0.045 | 0.0878 | 8.9 |
| 17 | <i>17:16</i> | <i>3.50</i> | <i>0.6</i> | <i>0.500</i> | <i>0.6</i> | <i>0.200</i> | <i>1.7674</i> | <i>1.00</i> | <i>1.7674</i> | <i>0.050</i> | <i>0.0884</i> | <i>9.0</i> |
| 18 | <i>16:57</i> | <i>3.60</i> | <i>0.6</i> | <i>0.500</i> | <i>0.6</i> | <i>0.200</i> | <i>1.7343</i> | <i>1.00</i> | <i>1.7343</i> | <i>0.050</i> | <i>0.0868</i> | <i>8.8</i> |
| 19 | <i>17:18</i> | <i>3.70</i> | <i>0.6</i> | <i>0.500</i> | <i>0.6</i> | <i>0.200</i> | <i>0.6148</i> | <i>1.00</i> | <i>0.6148</i> | <i>0.050</i> | <i>0.0308</i> | <i>3.1</i> |
| 20 | <i>16:58</i> | <i>3.80</i> | <i>0.6</i> | <i>0.500</i> | <i>0.6</i> | <i>0.200</i> | <i>0.4639</i> | <i>1.00</i> | <i>0.4639</i> | <i>0.075</i> | <i>0.0350</i> | <i>3.6</i> |
| 21 | <i>17:01</i> | <i>4.00</i> | <i>0.6</i> | <i>0.350</i> | <i>0.6</i> | <i>0.140</i> | <i>-0.1243</i> | <i>1.00</i> | <i>-0.1243</i> | <i>0.070</i> | <i>-0.0087</i> | <i>-0.9</i> |
| 22 | <i>17:02</i> | <i>4.20</i> | <i>0.6</i> | <i>0.350</i> | <i>0.6</i> | <i>0.140</i> | <i>-0.1010</i> | <i>1.00</i> | <i>-0.1010</i> | <i>0.070</i> | <i>-0.0071</i> | <i>-0.7</i> |
| 23 | <i>17:03</i> | <i>4.40</i> | <i>0.6</i> | <i>0.350</i> | <i>0.6</i> | <i>0.140</i> | <i>-0.1394</i> | <i>1.00</i> | <i>-0.1394</i> | <i>0.070</i> | <i>-0.0098</i> | <i>-1.0</i> |
| 24 | <i>17:04</i> | <i>4.60</i> | <i>0.6</i> | <i>0.300</i> | <i>0.6</i> | <i>0.120</i> | <i>-0.1926</i> | <i>1.00</i> | <i>-0.1926</i> | <i>0.060</i> | <i>-0.0116</i> | <i>-1.2</i> |
| 25 | <i>17:05</i> | <i>4.80</i> | <i>0.6</i> | <i>0.350</i> | <i>0.6</i> | <i>0.140</i> | <i>-0.1509</i> | <i>1.00</i> | <i>-0.1509</i> | <i>0.070</i> | <i>-0.0106</i> | <i>-1.1</i> |
| 26 | <i>17:07</i> | <i>5.00</i> | <i>0.6</i> | <i>0.350</i> | <i>0.6</i> | <i>0.140</i> | <i>-0.0010</i> | <i>1.00</i> | <i>-0.0010</i> | <i>0.087</i> | <i>-0.0001</i> | <i>0.0</i> |
| 27 | 17:15 | 5.30 | 0.6 | 0.550 | 0.6 | 0.220 | 0.3573 | 1.00 | 0.3573 | 0.164 | 0.0585 | 6.0 |
| 28 | 17:15 | 5.60 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File InformationFile Name
Start Date and TimeCSC111A.WAD
2011/09/26 16:46:39**Site Details**Site Name
Operator(s)CSC111A
RB



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

File Name CSC111A.WAD
Start Date and Time 2011/09/26 16:46:39

Site Details

Site Name CSC111A
Operator(s) RB

Quality Control

| St | Loc | %Dep | Message |
|----|------|------|---|
| 1 | 1.60 | 0.6 | High angle: 52 |
| 2 | 1.80 | 0.6 | High angle: 63 |
| 3 | 2.00 | 0.6 | High angle: 67 |
| 9 | 2.80 | 0.6 | High standard error: 0.099 |
| 11 | 3.00 | 0.6 | High standard error: 0.115 |
| 12 | 3.10 | 0.6 | High standard error: 0.094 |
| 13 | 3.20 | 0.6 | High angle: -22 |
| | | 0.6 | High standard error: 0.115 |
| 17 | 3.50 | 0.6 | High angle: -24 |
| 18 | 3.60 | 0.6 | High angle: -22 |
| 19 | 3.70 | 0.6 | High angle: -26 |
| 20 | 3.80 | 0.6 | High angle: -23 |
| 21 | 4.00 | 0.6 | High angle: -128 |
| 22 | 4.20 | 0.6 | High angle: -124 |
| 23 | 4.40 | 0.6 | High angle: -136 |
| 24 | 4.60 | 0.6 | High angle: -150 |
| 25 | 4.80 | 0.6 | High angle: -153 |
| 26 | 5.00 | 0.6 | SNR (31.8) is different from typical SNR (42.1) |
| | | 0.6 | Boundary QC is Fair; possible boundary interference |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

| | |
|---------------------|---------------------|
| File Name | CSC112.WAD |
| Start Date and Time | 2011/09/26 16:42:50 |

Site Details

| | |
|-------------|--------|
| Site Name | CSC112 |
| Operator(s) | CL |

System Information

| | |
|----------------------|-------------|
| Sensor Type | FlowTracker |
| Serial # | P3514 |
| CPU Firmware Version | 3.7 |
| Software Ver | 2.20 |

Units (English Units)

| | |
|-----------|------|
| Distance | ft |
| Velocity | ft/s |
| Area | ft^2 |
| Discharge | cfs |

Discharge Uncertainty

| Category | ISO | Stats |
|----------------|-------------|-------------|
| Accuracy | 1.0% | 1.0% |
| Depth | 0.4% | 2.6% |
| Velocity | 1.9% | 7.6% |
| Width | 0.1% | 0.1% |
| Method | 1.8% | - |
| # Stations | 1.9% | - |
| Overall | 3.4% | 8.1% |

Summary

| | | | |
|-----------------|-------------|------------------------|---------------|
| Averaging Int. | 40 | # Stations | 27 |
| Start Edge | REW | Total Width | 6.597 |
| Mean SNR | 32.9 dB | Total Area | 2.436 |
| Mean Temp | 56.52 °F | Mean Depth | 0.369 |
| Disch. Equation | Mid-Section | Mean Velocity | 0.3364 |
| | | Total Discharge | 0.8193 |

Measurement Results

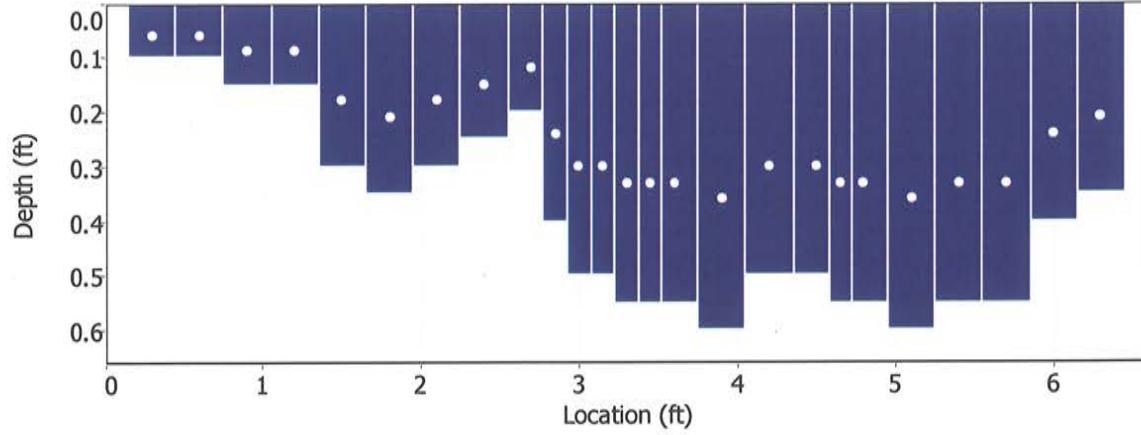
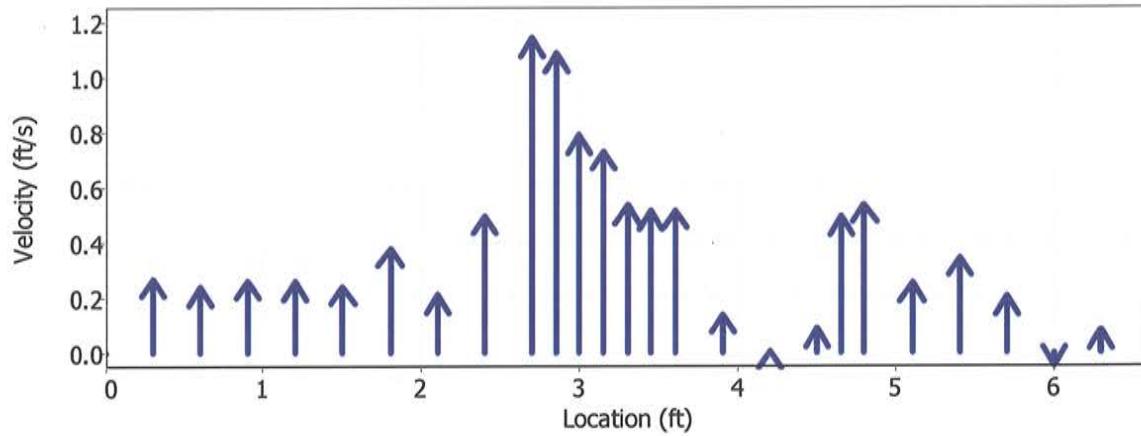
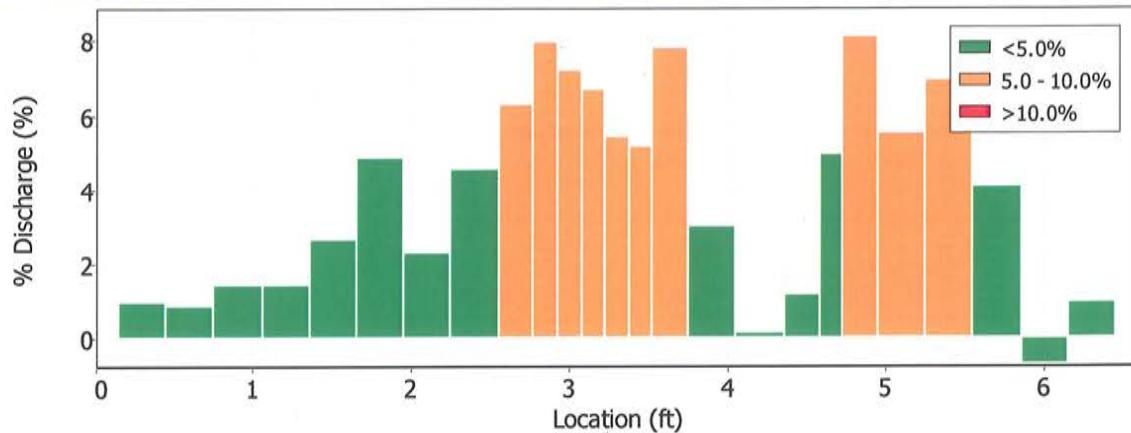
| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
|----|--------------|-------------|------------|--------------|------------|--------------|----------------|-------------|----------------|--------------|----------------|-------------|
| 0 | 16:42 | 0.00 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| 1 | 16:42 | 0.30 | 0.6 | 0.100 | 0.6 | 0.040 | 0.2697 | 1.00 | 0.2697 | 0.030 | 0.0081 | 1.0 |
| 2 | 16:43 | 0.60 | 0.6 | 0.100 | 0.6 | 0.040 | 0.2375 | 1.00 | 0.2375 | 0.030 | 0.0071 | 0.9 |
| 3 | 16:44 | 0.90 | 0.6 | 0.150 | 0.6 | 0.060 | 0.2644 | 1.00 | 0.2644 | 0.045 | 0.0119 | 1.5 |
| 4 | 16:45 | 1.20 | 0.6 | 0.150 | 0.6 | 0.060 | 0.2598 | 1.00 | 0.2598 | 0.045 | 0.0117 | 1.4 |
| 5 | 16:46 | 1.50 | 0.6 | 0.300 | 0.6 | 0.120 | 0.2415 | 1.00 | 0.2415 | 0.090 | 0.0217 | 2.7 |
| 6 | 16:47 | 1.80 | 0.6 | 0.350 | 0.6 | 0.140 | 0.3802 | 1.00 | 0.3802 | 0.105 | 0.0399 | 4.9 |
| 7 | <i>16:48</i> | <i>2.10</i> | <i>0.6</i> | <i>0.300</i> | <i>0.6</i> | <i>0.120</i> | <i>0.2106</i> | <i>1.00</i> | <i>0.2106</i> | <i>0.090</i> | <i>0.0189</i> | <i>2.3</i> |
| 8 | <i>16:49</i> | <i>2.40</i> | <i>0.6</i> | <i>0.250</i> | <i>0.6</i> | <i>0.100</i> | <i>0.4964</i> | <i>1.00</i> | <i>0.4964</i> | <i>0.075</i> | <i>0.0372</i> | <i>4.5</i> |
| 9 | 16:50 | 2.70 | 0.6 | 0.200 | 0.6 | 0.080 | 1.1430 | 1.00 | 1.1430 | 0.045 | 0.0516 | 6.3 |
| 10 | 17:11 | 2.85 | 0.6 | 0.400 | 0.6 | 0.160 | 1.0866 | 1.00 | 1.0866 | 0.060 | 0.0652 | 8.0 |
| 11 | 16:51 | 3.00 | 0.6 | 0.500 | 0.6 | 0.200 | 0.7894 | 1.00 | 0.7894 | 0.075 | 0.0592 | 7.2 |
| 12 | <i>17:08</i> | <i>3.15</i> | <i>0.6</i> | <i>0.500</i> | <i>0.6</i> | <i>0.200</i> | <i>0.7306</i> | <i>1.00</i> | <i>0.7306</i> | <i>0.075</i> | <i>0.0548</i> | <i>6.7</i> |
| 13 | <i>16:53</i> | <i>3.30</i> | <i>0.6</i> | <i>0.550</i> | <i>0.6</i> | <i>0.220</i> | <i>0.5361</i> | <i>1.00</i> | <i>0.5361</i> | <i>0.083</i> | <i>0.0442</i> | <i>5.4</i> |
| 14 | <i>17:09</i> | <i>3.45</i> | <i>0.6</i> | <i>0.550</i> | <i>0.6</i> | <i>0.220</i> | <i>0.5151</i> | <i>1.00</i> | <i>0.5151</i> | <i>0.082</i> | <i>0.0425</i> | <i>5.2</i> |
| 15 | <i>16:54</i> | <i>3.60</i> | <i>0.6</i> | <i>0.550</i> | <i>0.6</i> | <i>0.220</i> | <i>0.5187</i> | <i>1.00</i> | <i>0.5187</i> | <i>0.123</i> | <i>0.0639</i> | <i>7.8</i> |
| 16 | <i>16:55</i> | <i>3.90</i> | <i>0.6</i> | <i>0.600</i> | <i>0.6</i> | <i>0.240</i> | <i>0.1381</i> | <i>1.00</i> | <i>0.1381</i> | <i>0.180</i> | <i>0.0249</i> | <i>3.0</i> |
| 17 | 16:56 | 4.20 | 0.6 | 0.500 | 0.6 | 0.200 | 0.0092 | 1.00 | 0.0092 | 0.150 | 0.0014 | 0.2 |
| 18 | <i>16:57</i> | <i>4.50</i> | <i>0.6</i> | <i>0.500</i> | <i>0.6</i> | <i>0.200</i> | <i>0.0863</i> | <i>1.00</i> | <i>0.0863</i> | <i>0.113</i> | <i>0.0097</i> | <i>1.2</i> |
| 19 | <i>17:12</i> | <i>4.65</i> | <i>0.6</i> | <i>0.550</i> | <i>0.6</i> | <i>0.220</i> | <i>0.4951</i> | <i>1.00</i> | <i>0.4951</i> | <i>0.082</i> | <i>0.0408</i> | <i>5.0</i> |
| 20 | <i>16:59</i> | <i>4.80</i> | <i>0.6</i> | <i>0.550</i> | <i>0.6</i> | <i>0.220</i> | <i>0.5387</i> | <i>1.00</i> | <i>0.5387</i> | <i>0.123</i> | <i>0.0663</i> | <i>8.1</i> |
| 21 | 17:01 | 5.10 | 0.6 | 0.600 | 0.6 | 0.240 | 0.2513 | 1.00 | 0.2513 | 0.180 | 0.0452 | 5.5 |
| 22 | <i>17:02</i> | <i>5.40</i> | <i>0.6</i> | <i>0.550</i> | <i>0.6</i> | <i>0.220</i> | <i>0.3458</i> | <i>1.00</i> | <i>0.3458</i> | <i>0.165</i> | <i>0.0570</i> | <i>7.0</i> |
| 23 | <i>17:03</i> | <i>5.70</i> | <i>0.6</i> | <i>0.550</i> | <i>0.6</i> | <i>0.220</i> | <i>0.2037</i> | <i>1.00</i> | <i>0.2037</i> | <i>0.165</i> | <i>0.0336</i> | <i>4.1</i> |
| 24 | <i>17:04</i> | <i>6.00</i> | <i>0.6</i> | <i>0.400</i> | <i>0.6</i> | <i>0.160</i> | <i>-0.0479</i> | <i>1.00</i> | <i>-0.0479</i> | <i>0.120</i> | <i>-0.0057</i> | <i>-0.7</i> |
| 25 | <i>17:06</i> | <i>6.30</i> | <i>0.6</i> | <i>0.350</i> | <i>0.6</i> | <i>0.140</i> | <i>0.0784</i> | <i>1.00</i> | <i>0.0784</i> | <i>0.105</i> | <i>0.0082</i> | <i>1.0</i> |
| 26 | 17:06 | 6.60 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File InformationFile Name
Start Date and TimeCSC112.WAD
2011/09/26 16:42:50**Site Details**Site Name
Operator(s)CSC112
CL



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File InformationFile Name
Start Date and TimeCSC112.WAD
2011/09/26 16:42:50**Site Details**Site Name
Operator(s)CSC112
CL**Quality Control**

| St | Loc | %Dep | Message |
|----|------|------|----------------------------|
| 7 | 2.10 | 0.6 | High standard error: 0.034 |
| 8 | 2.40 | 0.6 | High standard error: 0.036 |
| 12 | 3.15 | 0.6 | High standard error: 0.038 |
| 13 | 3.30 | 0.6 | High standard error: 0.036 |
| 14 | 3.45 | 0.6 | High standard error: 0.034 |
| 15 | 3.60 | 0.6 | High standard error: 0.034 |
| 16 | 3.90 | 0.6 | High angle: 35 |
| 18 | 4.50 | 0.6 | High angle: 29 |
| 19 | 4.65 | 0.6 | High standard error: 0.036 |
| 20 | 4.80 | 0.6 | High standard error: 0.037 |
| 22 | 5.40 | 0.6 | High standard error: 0.032 |
| 23 | 5.70 | 0.6 | High standard error: 0.032 |
| 24 | 6.00 | 0.6 | High angle: -170 |
| 25 | 6.30 | 0.6 | High angle: 51 |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

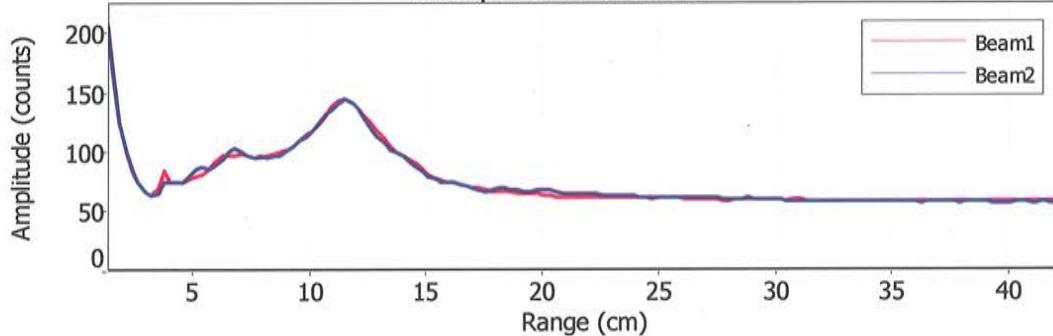
File Name CSC112.WAD
Start Date and Time 2011/09/26 16:42:50

Site Details

Site Name CSC112
Operator(s) CL

Automatic Quality Control Test (BeamCheck)

Mon Sep 26 16:40:59 MDT 2011



- ✓ Noise level check - Pass
- ✓ SNR check - Pass
- ✓ Peak location check - Pass
- ✓ Peak shape check - Pass



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

| File Information | | | | Site Details | | | | | | | | |
|---------------------|---------------------|-----------------|---------------|--------------|------------|-----------------------|----------------|----------------------|----------------|--------------|----------------|-------------|
| File Name | CSC113.WAD | | | Site Name | CSC113 | | | | | | | |
| Start Date and Time | 2011/09/26 17:53:18 | | | Operator(s) | DRR | | | | | | | |
| System Information | | | | | | Units (English Units) | | | | | | |
| Sensor Type | FlowTracker | Distance | ft | Serial # | P3568 | Velocity | ft/s | CPU Firmware Version | 3.7 | Area | ft^2 | |
| Software Ver | 2.20 | Discharge | cfs | | | | | | | | | |
| Summary | | | | | | Discharge Uncertainty | | | | | | |
| Averaging Int. | 40 | # Stations | 29 | Category | ISO | Stats | Accuracy | 1.0% | 1.0% | | | |
| Start Edge | LEW | Total Width | 7.198 | Depth | 0.3% | 6.2% | | | | | | |
| Mean SNR | 32.7 dB | Total Area | 2.816 | Velocity | 1.7% | 8.7% | | | | | | |
| Mean Temp | 52.47 °F | Mean Depth | 0.391 | Width | 0.1% | 0.1% | | | | | | |
| Disch. Equation | Mid-Section | Mean Velocity | 0.2492 | Method | 1.7% | - | | | | | | |
| | | Total Discharge | 0.7018 | # Stations | 1.8% | - | | | | | | |
| | | | | Overall | 3.2% | 10.7% | | | | | | |
| Measurement Results | | | | | | | | | | | | |
| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
| 0 | 17:53 | 3.20 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| 1 | 17:53 | 3.56 | 0.6 | 0.250 | 0.6 | 0.100 | -0.0007 | 1.00 | -0.0007 | 0.090 | -0.0001 | 0.0 |
| 2 | <i>17:55</i> | <i>3.92</i> | <i>0.6</i> | <i>0.350</i> | <i>0.6</i> | <i>0.140</i> | <i>-0.0098</i> | <i>1.00</i> | <i>-0.0098</i> | <i>0.126</i> | <i>-0.0012</i> | <i>-0.2</i> |
| 3 | 17:57 | 4.28 | 0.6 | 0.350 | 0.6 | 0.140 | 0.0292 | 1.00 | 0.0292 | 0.126 | 0.0037 | 0.5 |
| 4 | <i>18:00</i> | <i>4.64</i> | <i>0.6</i> | <i>0.400</i> | <i>0.6</i> | <i>0.160</i> | <i>0.0505</i> | <i>1.00</i> | <i>0.0505</i> | <i>0.144</i> | <i>0.0073</i> | <i>1.0</i> |
| 5 | <i>18:01</i> | <i>5.00</i> | <i>0.6</i> | <i>0.450</i> | <i>0.6</i> | <i>0.180</i> | <i>0.0633</i> | <i>1.00</i> | <i>0.0633</i> | <i>0.162</i> | <i>0.0103</i> | <i>1.5</i> |
| 6 | 18:02 | 5.36 | 0.6 | 0.550 | 0.6 | 0.220 | 0.0171 | 1.00 | 0.0171 | 0.198 | 0.0034 | 0.5 |
| 7 | <i>18:03</i> | <i>5.72</i> | <i>0.6</i> | <i>0.550</i> | <i>0.6</i> | <i>0.220</i> | <i>0.0778</i> | <i>1.00</i> | <i>0.0778</i> | <i>0.198</i> | <i>0.0154</i> | <i>2.2</i> |
| 8 | <i>18:04</i> | <i>6.08</i> | <i>0.6</i> | <i>0.500</i> | <i>0.6</i> | <i>0.200</i> | <i>0.1122</i> | <i>1.00</i> | <i>0.1122</i> | <i>0.180</i> | <i>0.0202</i> | <i>2.9</i> |
| 9 | <i>18:05</i> | <i>6.44</i> | <i>0.6</i> | <i>0.500</i> | <i>0.6</i> | <i>0.200</i> | <i>0.2982</i> | <i>1.00</i> | <i>0.2982</i> | <i>0.155</i> | <i>0.0463</i> | <i>6.6</i> |
| 10 | <i>18:32</i> | <i>6.70</i> | <i>0.6</i> | <i>0.500</i> | <i>0.6</i> | <i>0.200</i> | <i>0.4990</i> | <i>1.00</i> | <i>0.4990</i> | <i>0.090</i> | <i>0.0449</i> | <i>6.4</i> |
| 11 | 18:07 | 6.80 | 0.6 | 0.550 | 0.6 | 0.220 | 0.6188 | 1.00 | 0.6188 | 0.055 | 0.0340 | 4.8 |
| 12 | 18:30 | 6.90 | 0.6 | 0.400 | 0.6 | 0.160 | 0.8839 | 1.00 | 0.8839 | 0.040 | 0.0355 | 5.1 |
| 13 | <i>18:21</i> | <i>7.00</i> | <i>0.6</i> | <i>0.500</i> | <i>0.6</i> | <i>0.200</i> | <i>0.4816</i> | <i>1.00</i> | <i>0.4816</i> | <i>0.065</i> | <i>0.0312</i> | <i>4.4</i> |
| 14 | <i>18:08</i> | <i>7.16</i> | <i>0.6</i> | <i>0.500</i> | <i>0.6</i> | <i>0.200</i> | <i>0.2159</i> | <i>1.00</i> | <i>0.2159</i> | <i>0.130</i> | <i>0.0280</i> | <i>4.0</i> |
| 15 | <i>18:09</i> | <i>7.52</i> | <i>0.6</i> | <i>0.500</i> | <i>0.6</i> | <i>0.200</i> | <i>0.2215</i> | <i>1.00</i> | <i>0.2215</i> | <i>0.180</i> | <i>0.0399</i> | <i>5.7</i> |
| 16 | 18:11 | 7.88 | 0.6 | 0.450 | 0.6 | 0.180 | 0.3448 | 1.00 | 0.3448 | 0.086 | 0.0296 | 4.2 |
| 17 | 18:26 | 7.90 | 0.6 | 0.000 | 0.6 | 0.100 | 0.1765 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| 18 | 18:22 | 8.00 | 0.6 | 0.400 | 0.6 | 0.160 | 0.6368 | 1.00 | 0.6368 | 0.040 | 0.0255 | 3.6 |
| 19 | <i>18:29</i> | <i>8.10</i> | <i>0.6</i> | <i>0.400</i> | <i>0.6</i> | <i>0.160</i> | <i>0.6106</i> | <i>1.00</i> | <i>0.6106</i> | <i>0.048</i> | <i>0.0292</i> | <i>4.2</i> |
| 20 | 18:12 | 8.24 | 0.6 | 0.400 | 0.6 | 0.160 | 0.8169 | 1.00 | 0.8169 | 0.040 | 0.0326 | 4.7 |
| 21 | 18:27 | 8.30 | 0.6 | 0.350 | 0.6 | 0.140 | 0.7615 | 1.00 | 0.7615 | 0.046 | 0.0348 | 5.0 |
| 22 | <i>18:24</i> | <i>8.50</i> | <i>0.6</i> | <i>0.350</i> | <i>0.6</i> | <i>0.140</i> | <i>0.4862</i> | <i>1.00</i> | <i>0.4862</i> | <i>0.052</i> | <i>0.0254</i> | <i>3.6</i> |
| 23 | 18:13 | 8.60 | 0.6 | 0.350 | 0.6 | 0.140 | 0.5571 | 1.00 | 0.5571 | 0.080 | 0.0447 | 6.4 |
| 24 | <i>18:14</i> | <i>8.96</i> | <i>0.6</i> | <i>0.400</i> | <i>0.6</i> | <i>0.160</i> | <i>0.4665</i> | <i>1.00</i> | <i>0.4665</i> | <i>0.144</i> | <i>0.0672</i> | <i>9.6</i> |
| 25 | 18:15 | 9.32 | 0.6 | 0.400 | 0.6 | 0.160 | 0.4009 | 1.00 | 0.4009 | 0.144 | 0.0577 | 8.2 |
| 26 | 18:17 | 9.68 | 0.6 | 0.300 | 0.6 | 0.120 | 0.2247 | 1.00 | 0.2247 | 0.108 | 0.0243 | 3.5 |
| 27 | 18:18 | 10.04 | 0.6 | 0.250 | 0.6 | 0.100 | 0.1368 | 1.00 | 0.1368 | 0.090 | 0.0123 | 1.8 |
| 28 | 18:18 | 10.40 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |

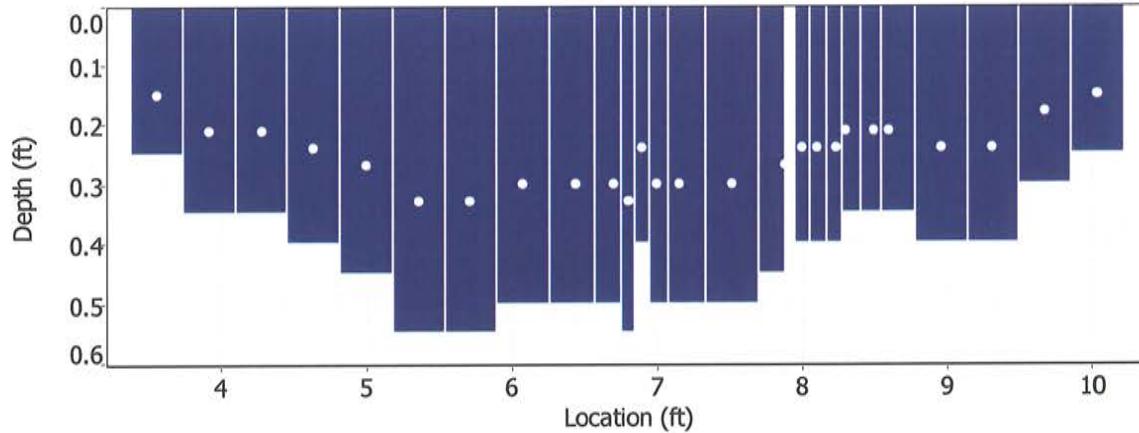
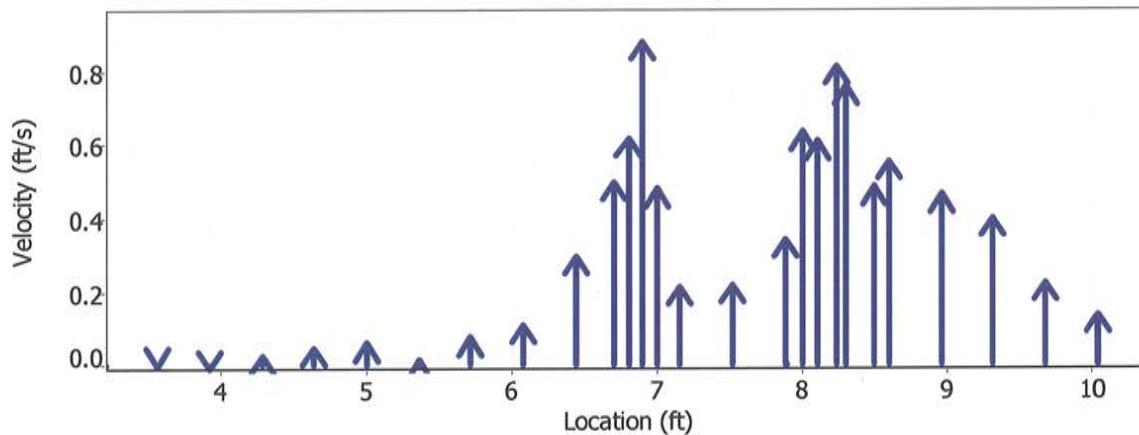
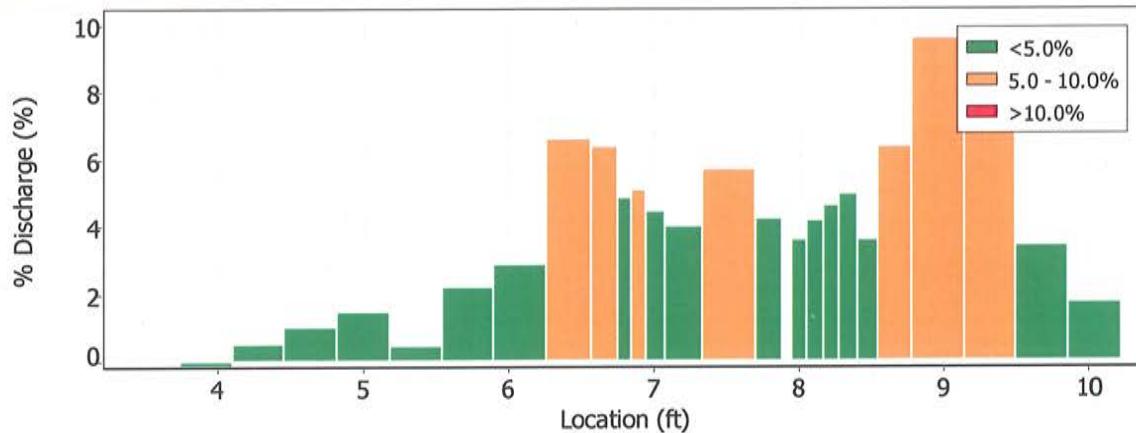
Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

| File Information | | Site Details | |
|---------------------|---------------------|--------------|--------|
| File Name | CSC113.WAD | Site Name | CSC113 |
| Start Date and Time | 2011/09/26 17:53:18 | Operator(s) | DRR |





Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

| File Information | | | Site Details |
|------------------|------------|---------------------|---|
| File Name | CSC113.WAD | Start Date and Time | 2011/09/26 17:53:18 |
| Quality Control | | | |
| St | Loc | %Dep | Message |
| 2 | 3.92 | 0.6 | High SNR variation during measurement: 5.2,4.7 |
| 4 | 4.64 | 0.6 | High angle: 28 |
| 5 | 5.00 | 0.6 | High angle: 27 0.6 Boundary QC is Fair; possible boundary interference |
| 7 | 5.72 | 0.6 | High angle: 34 |
| 8 | 6.08 | 0.6 | High angle: 21 |
| 9 | 6.44 | 0.6 | High angle: 24 |
| 10 | 6.70 | 0.6 | High standard error: 0.031 |
| 13 | 7.00 | 0.6 | High angle: 28 0.6 High standard error: 0.035 |
| 14 | 7.16 | 0.6 | High angle: 21 0.6 High standard error: 0.031 |
| 15 | 7.52 | 0.6 | High angle: 30 |
| 19 | 8.10 | 0.6 | High standard error: 0.036 |
| 22 | 8.50 | 0.6 | High standard error: 0.032 |
| 24 | 8.96 | 0.6 | High standard error: 0.041 |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

| File Information | | Site Details | |
|------------------------------|---------------------|------------------------|-----------------|
| File Name | CSC116.WAD | Site Name | CSC116 |
| Start Date and Time | | | |
| | 2011/09/27 10:35:56 | Operator(s) | JW |
| System Information | | | |
| Sensor Type | FlowTracker | Units | (English Units) |
| Serial # | P3512 | Distance | ft |
| CPU Firmware Version | 3.7 | Velocity | ft/s |
| Software Ver | 2.20 | Area | ft^2 |
| | | Discharge | cfs |
| Summary | | | |
| Averaging Int. | 40 | # Stations | 37 |
| Start Edge | REW | Total Width | 8.399 |
| Mean SNR | 29.8 dB | Total Area | 4.171 |
| Mean Temp | 44.74 °F | Mean Depth | 0.497 |
| Disch. Equation | Mid-Section | Mean Velocity | 0.0939 |
| | | Total Discharge | 0.3917 |
| Discharge Uncertainty | | | |
| Category | ISO | Stats | |
| Accuracy | 1.0% | 1.0% | |
| Depth | 0.6% | 15.1% | |
| Velocity | 7.4% | 16.9% | |
| Width | 0.2% | 0.2% | |
| Method | 3.0% | - | |
| # Stations | 1.4% | - | |
| Overall | 8.2% | 22.7% | |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

| File Information | | | | Site Details | | | | | | | |
|---------------------|------------|-----------|--------|--------------|----|--|--|--|--|--|--|
| File Name | CSC116.WAD | Site Name | CSC116 | | | | | | | | |
| Start Date and Time | | | | Operator(s) | JW | | | | | | |

| Measurement Results | | | | | | | | | | | | | |
|---------------------|--------------|-------------|--------|------------|--------------|------------|--------------|----------------|-------------|----------------|--------------|----------------|--------------|
| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q | |
| 0 | 10:35 | 1.00 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 | |
| 1 | 10:37 | 1.40 | | 0.6 | 0.550 | 0.6 | 0.220 | 0.6129 | 1.00 | 0.6129 | 0.137 | 0.0842 | 21.5 |
| 2 | 11:23 | 1.50 | | 0.6 | 0.500 | 0.6 | 0.200 | 0.4797 | 1.00 | 0.4797 | 0.050 | 0.0240 | 6.1 |
| 3 | 11:11 | 1.60 | | 0.6 | 0.400 | 0.6 | 0.160 | 0.3615 | 1.00 | 0.3615 | 0.040 | 0.0145 | 3.7 |
| 4 | 11:14 | 1.70 | | 0.6 | 0.600 | 0.6 | 0.240 | 0.4777 | 1.00 | 0.4777 | 0.060 | 0.0286 | 7.3 |
| 5 | <i>10:38</i> | <i>1.80</i> | | <i>0.6</i> | <i>0.550</i> | <i>0.6</i> | <i>0.220</i> | <i>0.4429</i> | <i>1.00</i> | <i>0.4429</i> | <i>0.055</i> | <i>0.0243</i> | <i>6.2</i> |
| 6 | 11:16 | 1.90 | | 0.6 | 0.500 | 0.6 | 0.200 | 0.6093 | 1.00 | 0.6093 | 0.050 | 0.0305 | 7.8 |
| 7 | 11:12 | 2.00 | | 0.6 | 0.550 | 0.6 | 0.220 | 0.5600 | 1.00 | 0.5600 | 0.055 | 0.0308 | 7.9 |
| 8 | 11:17 | 2.10 | | 0.6 | 0.700 | 0.6 | 0.280 | 0.6385 | 1.00 | 0.6385 | 0.052 | 0.0335 | 8.6 |
| 9 | 11:21 | 2.15 | | 0.6 | 0.000 | 0.6 | 0.080 | 0.7546 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| 10 | 10:39 | 2.20 | | 0.6 | 0.600 | 0.6 | 0.240 | 0.7133 | 1.00 | 0.7133 | 0.015 | 0.0107 | 2.7 |
| 11 | 11:20 | 2.20 | | 0.6 | 0.650 | 0.6 | 0.260 | 0.6066 | 1.00 | 0.6066 | 0.033 | 0.0197 | 5.0 |
| 12 | 11:24 | 2.30 | | 0.6 | 0.500 | 0.6 | 0.200 | 0.7083 | 1.00 | 0.7083 | 0.050 | 0.0354 | 9.0 |
| 13 | 11:29 | 2.40 | | 0.6 | 0.500 | 0.6 | 0.200 | 0.7877 | 1.00 | 0.7877 | 0.050 | 0.0394 | 10.1 |
| 14 | 11:27 | 2.50 | | 0.6 | 0.500 | 0.6 | 0.200 | 0.7392 | 1.00 | 0.7392 | 0.050 | 0.0369 | 9.4 |
| 15 | 10:41 | 2.60 | | 0.6 | 0.500 | 0.6 | 0.200 | 0.4442 | 1.00 | 0.4442 | 0.025 | 0.0111 | 2.8 |
| 16 | 11:31 | 2.60 | | 0.6 | 0.550 | 0.6 | 0.220 | 0.5220 | 1.00 | 0.5220 | 0.014 | 0.0072 | 1.8 |
| 17 | 11:26 | 2.65 | | 0.6 | 0.550 | 0.6 | 0.220 | 0.5764 | 1.00 | 0.5764 | 0.028 | 0.0159 | 4.0 |
| 18 | 11:19 | 2.70 | | 0.6 | 0.500 | 0.6 | 0.200 | 0.5374 | 1.00 | 0.5374 | 0.037 | 0.0201 | 5.1 |
| 19 | 11:32 | 2.80 | | 0.6 | 0.500 | 0.6 | 0.200 | 0.3366 | 1.00 | 0.3366 | 0.075 | 0.0252 | 6.4 |
| 20 | <i>10:42</i> | <i>3.00</i> | | <i>0.6</i> | <i>0.850</i> | <i>0.6</i> | <i>0.340</i> | <i>0.0909</i> | <i>1.00</i> | <i>0.0909</i> | <i>0.255</i> | <i>0.0232</i> | <i>5.9</i> |
| 21 | <i>10:43</i> | <i>3.40</i> | | <i>0.6</i> | <i>0.500</i> | <i>0.6</i> | <i>0.200</i> | <i>0.0945</i> | <i>1.00</i> | <i>0.0945</i> | <i>0.200</i> | <i>0.0189</i> | <i>4.8</i> |
| 22 | <i>10:46</i> | <i>3.80</i> | | <i>0.6</i> | <i>0.550</i> | <i>0.6</i> | <i>0.220</i> | <i>-0.0801</i> | <i>1.00</i> | <i>-0.0801</i> | <i>0.220</i> | <i>-0.0176</i> | <i>-4.5</i> |
| 23 | <i>10:47</i> | <i>4.20</i> | | <i>0.6</i> | <i>0.450</i> | <i>0.6</i> | <i>0.180</i> | <i>-0.1522</i> | <i>1.00</i> | <i>-0.1522</i> | <i>0.180</i> | <i>-0.0274</i> | <i>-7.0</i> |
| 24 | <i>10:49</i> | <i>4.60</i> | | <i>0.6</i> | <i>0.500</i> | <i>0.6</i> | <i>0.200</i> | <i>0.0000</i> | <i>1.00</i> | <i>0.0000</i> | <i>0.200</i> | <i>0.0000</i> | <i>0.0</i> |
| 25 | 10:52 | 5.00 | | 0.6 | 0.500 | 0.6 | 0.200 | 0.0056 | 1.00 | 0.0056 | 0.200 | 0.0011 | 0.3 |
| 26 | 10:53 | 5.40 | | 0.6 | 0.400 | 0.6 | 0.160 | -0.0023 | 1.00 | -0.0023 | 0.160 | -0.0004 | -0.1 |
| 27 | <i>10:54</i> | <i>5.80</i> | | <i>0.6</i> | <i>0.550</i> | <i>0.6</i> | <i>0.220</i> | <i>0.0440</i> | <i>1.00</i> | <i>0.0440</i> | <i>0.220</i> | <i>0.0097</i> | <i>2.5</i> |
| 28 | <i>10:55</i> | <i>6.20</i> | | <i>0.6</i> | <i>0.500</i> | <i>0.6</i> | <i>0.200</i> | <i>0.0456</i> | <i>1.00</i> | <i>0.0456</i> | <i>0.200</i> | <i>0.0091</i> | <i>2.3</i> |
| 29 | <i>10:57</i> | <i>6.60</i> | | <i>0.6</i> | <i>0.950</i> | <i>0.6</i> | <i>0.380</i> | <i>-0.0374</i> | <i>1.00</i> | <i>-0.0374</i> | <i>0.380</i> | <i>-0.0142</i> | <i>-3.6</i> |
| 30 | 11:00 | 7.00 | | 0.6 | 0.700 | 0.6 | 0.280 | -0.0315 | 1.00 | -0.0315 | 0.280 | -0.0088 | -2.3 |
| 31 | <i>11:01</i> | <i>7.40</i> | | <i>0.6</i> | <i>0.500</i> | <i>0.6</i> | <i>0.200</i> | <i>-0.0571</i> | <i>1.00</i> | <i>-0.0571</i> | <i>0.200</i> | <i>-0.0114</i> | <i>-2.9</i> |
| 32 | <i>11:03</i> | <i>7.80</i> | | <i>0.6</i> | <i>0.500</i> | <i>0.6</i> | <i>0.200</i> | <i>-0.0666</i> | <i>1.00</i> | <i>-0.0666</i> | <i>0.200</i> | <i>-0.0133</i> | <i>-3.4</i> |
| 33 | <i>11:05</i> | <i>8.20</i> | | <i>0.6</i> | <i>0.500</i> | <i>0.6</i> | <i>0.200</i> | <i>-0.0535</i> | <i>1.00</i> | <i>-0.0535</i> | <i>0.200</i> | <i>-0.0107</i> | <i>-2.7</i> |
| 34 | <i>11:06</i> | <i>8.60</i> | | <i>0.6</i> | <i>0.300</i> | <i>0.6</i> | <i>0.120</i> | <i>-0.0364</i> | <i>1.00</i> | <i>-0.0364</i> | <i>0.120</i> | <i>-0.0044</i> | <i>-1.1</i> |
| 35 | <i>11:07</i> | <i>9.00</i> | | <i>0.6</i> | <i>0.200</i> | <i>0.6</i> | <i>0.080</i> | <i>-0.6781</i> | <i>1.00</i> | <i>-0.6781</i> | <i>0.080</i> | <i>-0.0543</i> | <i>-13.9</i> |
| 36 | 11:07 | 9.40 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 | |

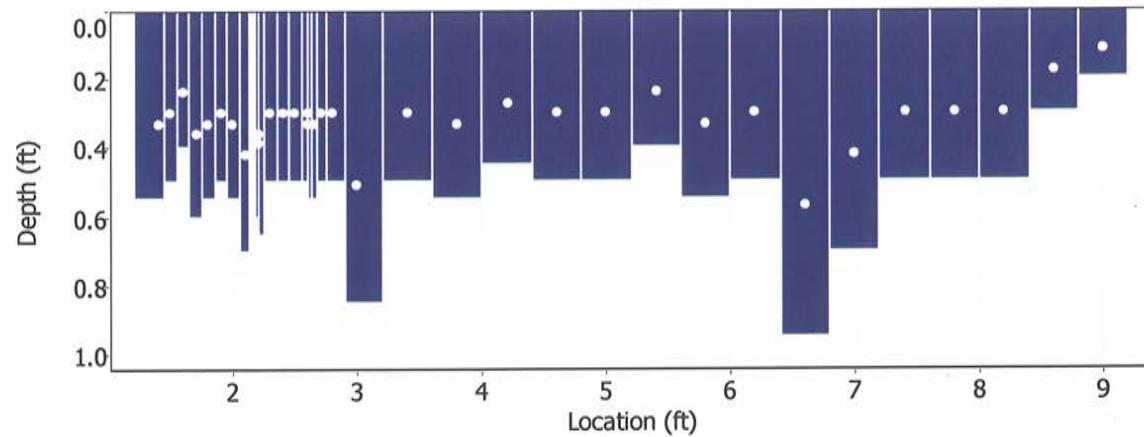
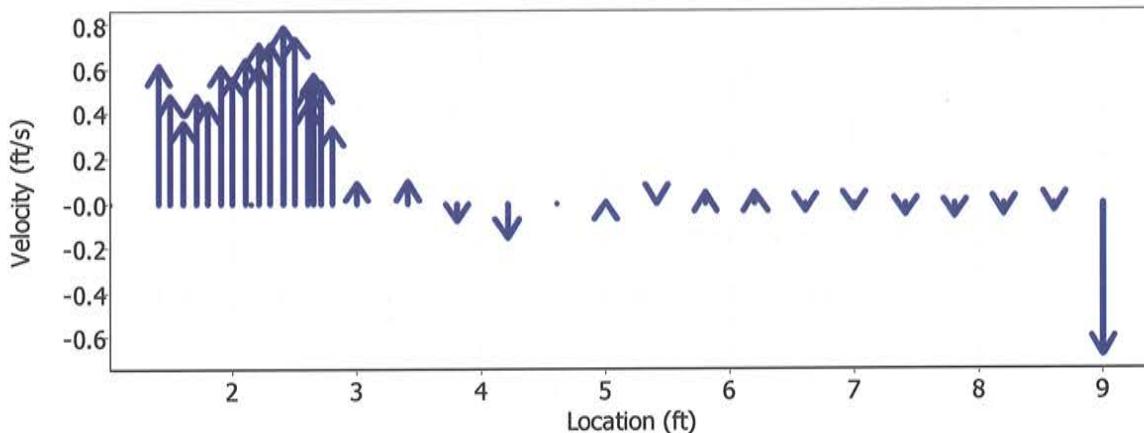
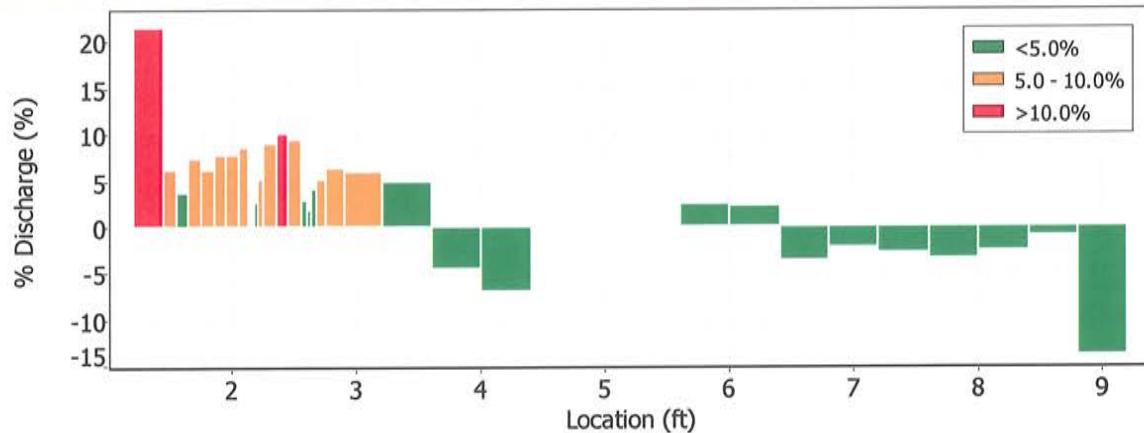
Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

| File Information | | Site Details | |
|---------------------|---------------------|--------------|--------|
| File Name | CSC116.WAD | Site Name | CSC116 |
| Start Date and Time | 2011/09/27 10:35:56 | Operator(s) | JW |





Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File InformationFile Name
Start Date and TimeCSC116.WAD
2011/09/27 10:35:56**Site Details**Site Name
Operator(s)CSC116
JW**Quality Control**

| St | Loc | %Dep | Message |
|----|------|------|---|
| 5 | 1.80 | 0.6 | High angle: -34 |
| 20 | 3.00 | 0.6 | High angle: -60 |
| 21 | 3.40 | 0.6 | High angle: -52 |
| 22 | 3.80 | 0.6 | High angle: -117 |
| 23 | 4.20 | 0.6 | High angle: -141 |
| 24 | 4.60 | 0.6 | High differences in beam SNR: 16.7,27.9 0.6 Boundary QC is Good; possible boundary interference |
| 27 | 5.80 | 0.6 | High angle: -42 |
| 28 | 6.20 | 0.6 | High angle: -64 0.6 High SNR variation during measurement: 4.3,5.2 |
| 29 | 6.60 | 0.6 | High angle: 149 |
| 30 | 7.00 | 0.6 | High angle: 174 |
| 31 | 7.40 | 0.6 | High angle: 171 |
| 32 | 7.80 | 0.6 | High angle: -165 |
| 33 | 8.20 | 0.6 | High angle: -149 |
| 34 | 8.60 | 0.6 | High angle: -155 |
| 35 | 9.00 | 0.6 | High angle: -175 0.6 Low SNR: 0.0,0.0 0.6 SNR (0.0) is different from typical SNR (29.8) 0.6 High standard error: 0.326 0.6 Boundary QC is Good; possible boundary interference |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

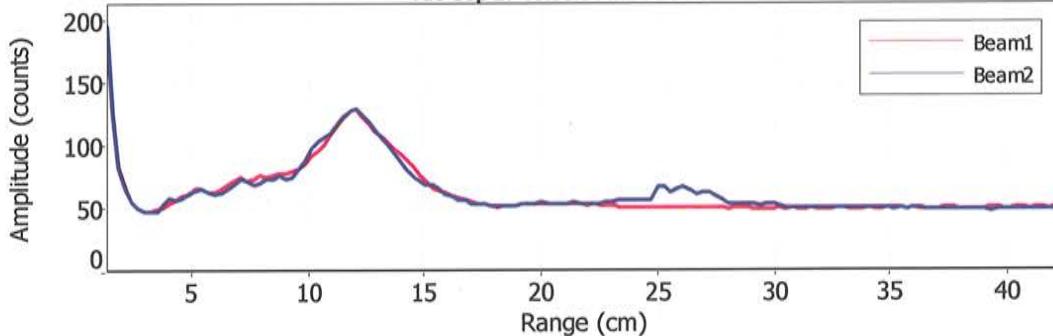
File Name CSC116.WAD
Start Date and Time 2011/09/27 10:35:56

Site Details

Site Name CSC116
Operator(s) JW

Automatic Quality Control Test (BeamCheck)

Tue Sep 27 10:33:51 MDT 2011



- Noise level check - Pass
- SNR check - Pass
- Peak location check - Pass
- Peak shape check - Pass



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

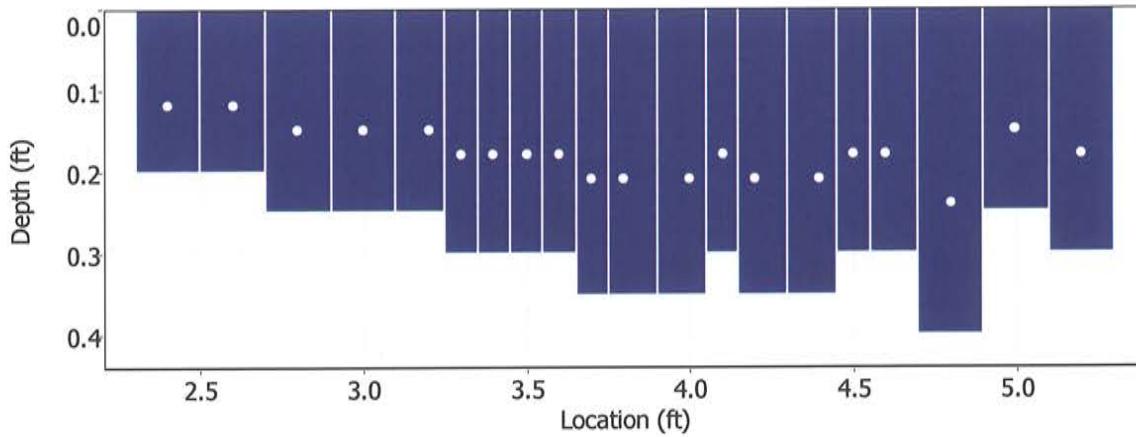
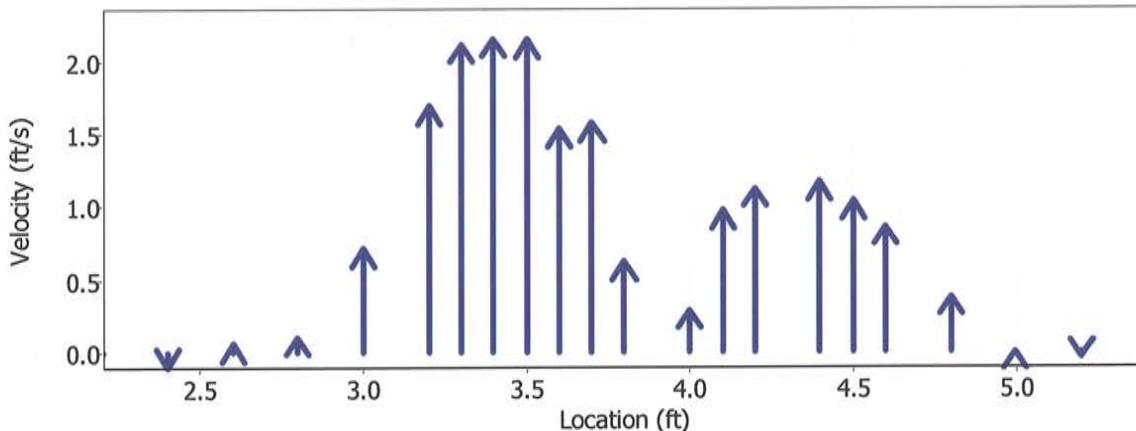
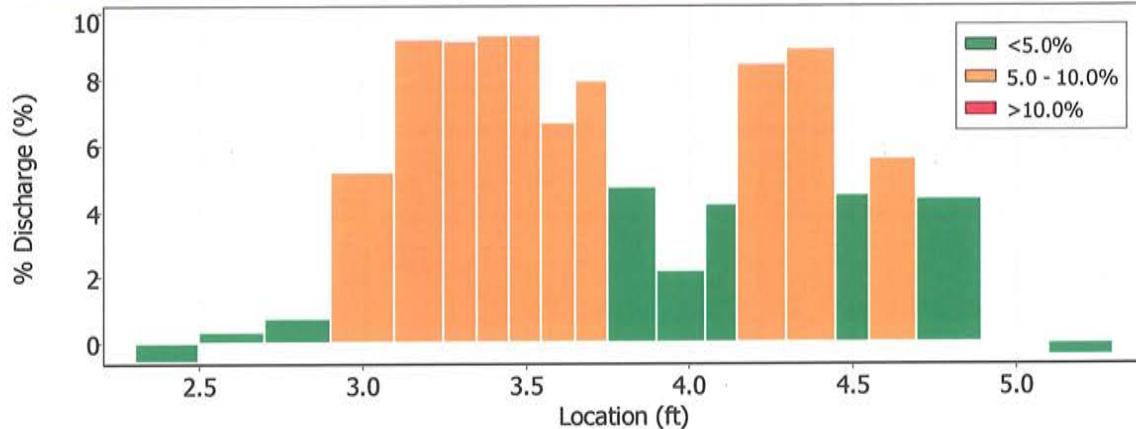
| File Information | | | | Site Details | | | | | | | | |
|----------------------------|---|------------------------|---------------|------------------------------|---------|-------|---------|------------------------------|---------|-------|---------|------|
| File Name | CSC116A.WAD | | | Site Name | CSC116A | | | | | | | |
| Start Date and Time | 2011/09/27 09:52:39 <th data-kind="ghost"></th> <th data-kind="ghost"></th> <th>Operator(s)</th> <td data-cs="3" data-kind="parent">RB</td> <td data-kind="ghost"></td> <td data-kind="ghost"></td> | | | Operator(s) | RB | | | | | | | |
| System Information | | | | Units (English Units) | | | | Discharge Uncertainty | | | | |
| Sensor Type | FlowTracker | Distance | ft | Category | ISO | Stats | | Accuracy | 1.0% | 1.0% | | |
| Serial # | P3533 | Velocity | ft/s | Depth | 0.4% | 3.3% | | | | | | |
| CPU Firmware Version | 3.7 | Area | ft^2 | Velocity | 1.8% | 6.5% | | | | | | |
| Software Ver | 2.20 | Discharge | cfs | Width | 0.1% | 0.1% | | | | | | |
| Summary | | | | Method | 2.0% | - | | | | | | |
| Averaging Int. | 40 | # Stations | 22 | # Stations | 2.3% | - | | | | | | |
| Start Edge | REW | Total Width | 3.197 | Overall | 3.7% | 7.4% | | | | | | |
| Mean SNR | 37.5 dB | Total Area | 0.877 | | | | | | | | | |
| Mean Temp | 43.37 °F | Mean Depth | 0.274 | | | | | | | | | |
| Disch. Equation | Mid-Section | Mean Velocity | 0.7896 | | | | | | | | | |
| | | Total Discharge | 0.6922 | | | | | | | | | |
| Measurement Results | | | | | | | | | | | | |
| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
| 0 | 09:52 | 2.20 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| 1 | 09:52 | 2.40 | 0.6 | 0.200 | 0.6 | 0.080 | -0.1024 | 1.00 | -0.1024 | 0.040 | -0.0041 | -0.6 |
| 2 | 09:53 | 2.60 | 0.6 | 0.200 | 0.6 | 0.080 | 0.0577 | 1.00 | 0.0577 | 0.040 | 0.0023 | 0.3 |
| 3 | 09:54 | 2.80 | 0.6 | 0.250 | 0.6 | 0.100 | 0.1070 | 1.00 | 0.1070 | 0.050 | 0.0053 | 0.8 |
| 4 | 09:56 | 3.00 | 0.6 | 0.250 | 0.6 | 0.100 | 0.7165 | 1.00 | 0.7165 | 0.050 | 0.0358 | 5.2 |
| 5 | 09:57 | 3.20 | 0.6 | 0.250 | 0.6 | 0.100 | 1.6959 | 1.00 | 1.6959 | 0.038 | 0.0637 | 9.2 |
| 6 | 10:10 | 3.30 | 0.6 | 0.300 | 0.6 | 0.120 | 2.1184 | 1.00 | 2.1184 | 0.030 | 0.0635 | 9.2 |
| 7 | 09:58 | 3.40 | 0.6 | 0.300 | 0.6 | 0.120 | 2.1558 | 1.00 | 2.1558 | 0.030 | 0.0647 | 9.3 |
| 8 | 10:11 | 3.50 | 0.6 | 0.300 | 0.6 | 0.120 | 2.1499 | 1.00 | 2.1499 | 0.030 | 0.0644 | 9.3 |
| 9 | 09:59 | 3.60 | 0.6 | 0.300 | 0.6 | 0.120 | 1.5400 | 1.00 | 1.5400 | 0.030 | 0.0462 | 6.7 |
| 10 | 10:13 | 3.70 | 0.6 | 0.350 | 0.6 | 0.140 | 1.5758 | 1.00 | 1.5758 | 0.035 | 0.0551 | 8.0 |
| 11 | 10:00 | 3.80 | 0.6 | 0.350 | 0.6 | 0.140 | 0.6237 | 1.00 | 0.6237 | 0.052 | 0.0326 | 4.7 |
| 12 | 10:02 | 4.00 | 0.6 | 0.350 | 0.6 | 0.140 | 0.2894 | 1.00 | 0.2894 | 0.053 | 0.0153 | 2.2 |
| 13 | 10:12 | 4.10 | 0.6 | 0.300 | 0.6 | 0.120 | 0.9754 | 1.00 | 0.9754 | 0.030 | 0.0292 | 4.2 |
| 14 | 10:02 | 4.20 | 0.6 | 0.350 | 0.6 | 0.140 | 1.1237 | 1.00 | 1.1237 | 0.052 | 0.0586 | 8.5 |
| 15 | 10:03 | 4.40 | 0.6 | 0.350 | 0.6 | 0.140 | 1.1722 | 1.00 | 1.1722 | 0.053 | 0.0619 | 8.9 |
| 16 | 10:15 | 4.50 | 0.6 | 0.300 | 0.6 | 0.120 | 1.0397 | 1.00 | 1.0397 | 0.030 | 0.0311 | 4.5 |
| 17 | 10:04 | 4.60 | 0.6 | 0.300 | 0.6 | 0.120 | 0.8668 | 1.00 | 0.8668 | 0.045 | 0.0387 | 5.6 |
| 18 | 10:06 | 4.80 | 0.6 | 0.400 | 0.6 | 0.160 | 0.3802 | 1.00 | 0.3802 | 0.080 | 0.0304 | 4.4 |
| 19 | 10:07 | 5.00 | 0.6 | 0.250 | 0.6 | 0.100 | 0.0043 | 1.00 | 0.0043 | 0.050 | 0.0002 | 0.0 |
| 20 | 10:08 | 5.20 | 0.6 | 0.300 | 0.6 | 0.120 | -0.0463 | 1.00 | -0.0463 | 0.060 | -0.0028 | -0.4 |
| 21 | 10:08 | 5.40 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File InformationFile Name
Start Date and TimeCSC116A.WAD
2011/09/27 09:52:39**Site Details**Site Name
Operator(s)CSC116A
RB



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

File Name CSC116A.WAD
Start Date and Time 2011/09/27 09:52:39

Site Details

Site Name CSC116A
Operator(s) RB

Quality Control

| St | Loc | %Dep | Message |
|----|------|------|----------------------------|
| 1 | 2.40 | 0.6 | High angle: 153 |
| 2 | 2.60 | 0.6 | High angle: 40 |
| 3 | 2.80 | 0.6 | High angle: 39 |
| 4 | 3.00 | 0.6 | High number of spikes: 5 |
| 5 | 3.20 | 0.6 | High angle: 21 |
| 9 | 3.60 | 0.6 | High standard error: 0.091 |
| 10 | 3.70 | 0.6 | High standard error: 0.151 |
| 11 | 3.80 | 0.6 | High standard error: 0.132 |
| 14 | 4.20 | 0.6 | High standard error: 0.091 |
| 20 | 5.20 | 0.6 | High angle: -144 |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

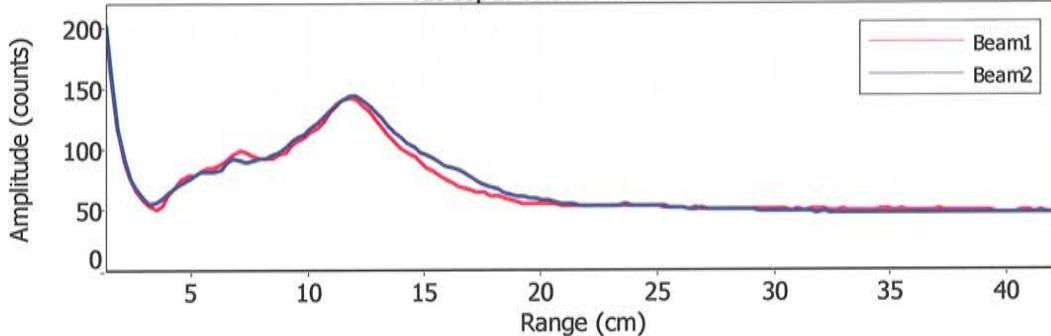
File Name CSC116A.WAD
Start Date and Time 2011/09/27 09:52:39

Site Details

Site Name CSC116A
Operator(s) RB

Automatic Quality Control Test (BeamCheck)

Tue Sep 27 09:51:15 MDT 2011



- ✓ Noise level check - Pass
- ✓ SNR check - Pass
- ✓ Peak location check - Pass
- ✓ Peak shape check - Pass



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

| File Information | | | | Site Details | | | | | | | | |
|----------------------------|---------------------|---------------|--------|------------------------------|--------|-------|---------|------------------------------|---------|-------|---------|------|
| File Name | CSC120.WAD | | | Site Name | CSC120 | | | | | | | |
| Start Date and Time | 2011/09/27 15:44:36 | | | Operator(s) | JW | | | | | | | |
| System Information | | | | Units (English Units) | | | | Discharge Uncertainty | | | | |
| Sensor Type | FlowTracker | Distance | ft | Accuracy | 1.0% | 1.0% | | Category | ISO | Stats | | |
| Serial # | P3533 | Velocity | ft/s | Depth | 0.4% | 3.9% | | | | | | |
| CPU Firmware Version | 3.7 | Area | ft^2 | Velocity | 2.2% | 10.0% | | | | | | |
| Software Ver | 2.20 | Discharge | cfs | Width | 0.1% | 0.1% | | | | | | |
| Summary | | | | | | | | | | | | |
| Averaging Int. | 40 | # Stations | 22 | | | | | | | | | |
| Start Edge | REW | Total Width | 4.798 | | | | | | | | | |
| Mean SNR | 37.2 dB | Total Area | 1.533 | | | | | | | | | |
| Mean Temp | 47.46 °F | Mean Depth | 0.319 | | | | | | | | | |
| Disch. Equation | Mid-Section | Mean Velocity | 0.2735 | | | | | | | | | |
| | | | | Total Discharge | | | | 0.4192 | | | | |
| Measurement Results | | | | | | | | | | | | |
| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
| 0 | 15:44 | 4.60 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| 1 | 15:44 | 4.90 | 0.6 | 0.300 | 0.6 | 0.120 | -0.0016 | 1.00 | -0.0016 | 0.090 | -0.0001 | 0.0 |
| 2 | 15:45 | 5.20 | 0.6 | 0.500 | 0.6 | 0.200 | 0.1916 | 1.00 | 0.1916 | 0.113 | 0.0216 | 5.1 |
| 3 | 16:28 | 5.35 | 0.6 | 0.450 | 0.6 | 0.180 | 0.2572 | 1.00 | 0.2572 | 0.067 | 0.0174 | 4.1 |
| 4 | 15:50 | 5.50 | 0.6 | 0.500 | 0.6 | 0.200 | 0.4764 | 1.00 | 0.4764 | 0.063 | 0.0298 | 7.1 |
| 5 | 16:30 | 5.60 | 0.6 | 0.400 | 0.6 | 0.160 | 0.6381 | 1.00 | 0.6381 | 0.030 | 0.0192 | 4.6 |
| 6 | 16:26 | 5.65 | 0.6 | 0.500 | 0.6 | 0.200 | 0.5604 | 1.00 | 0.5604 | 0.050 | 0.0279 | 6.7 |
| 7 | 15:56 | 5.80 | 0.6 | 0.450 | 0.6 | 0.180 | 0.4186 | 1.00 | 0.4186 | 0.068 | 0.0283 | 6.7 |
| 8 | 16:23 | 5.95 | 0.6 | 0.400 | 0.6 | 0.160 | 0.3451 | 1.00 | 0.3451 | 0.060 | 0.0207 | 4.9 |
| 9 | 15:58 | 6.10 | 0.6 | 0.400 | 0.6 | 0.160 | 0.4413 | 1.00 | 0.4413 | 0.090 | 0.0396 | 9.5 |
| 10 | 16:00 | 6.40 | 0.6 | 0.300 | 0.6 | 0.120 | 0.3698 | 1.00 | 0.3698 | 0.090 | 0.0332 | 7.9 |
| 11 | 16:01 | 6.70 | 0.6 | 0.250 | 0.6 | 0.100 | 0.3986 | 1.00 | 0.3986 | 0.075 | 0.0299 | 7.1 |
| 12 | 16:04 | 7.00 | 0.6 | 0.300 | 0.6 | 0.120 | 0.1030 | 1.00 | 0.1030 | 0.090 | 0.0093 | 2.2 |
| 13 | 16:05 | 7.30 | 0.6 | 0.250 | 0.6 | 0.100 | 0.5702 | 1.00 | 0.5702 | 0.056 | 0.0322 | 7.7 |
| 14 | 16:24 | 7.45 | 0.6 | 0.200 | 0.6 | 0.080 | 0.6450 | 1.00 | 0.6450 | 0.030 | 0.0194 | 4.6 |
| 15 | 16:06 | 7.60 | 0.6 | 0.300 | 0.6 | 0.120 | 0.5814 | 1.00 | 0.5814 | 0.067 | 0.0391 | 9.3 |
| 16 | 16:09 | 7.90 | 0.6 | 0.350 | 0.6 | 0.140 | 0.2743 | 1.00 | 0.2743 | 0.105 | 0.0288 | 6.9 |
| 17 | 16:11 | 8.20 | 0.6 | 0.400 | 0.6 | 0.160 | 0.1693 | 1.00 | 0.1693 | 0.120 | 0.0203 | 4.8 |
| 18 | 16:13 | 8.50 | 0.6 | 0.400 | 0.6 | 0.160 | -0.2159 | 1.00 | -0.2159 | 0.120 | -0.0259 | -6.2 |
| 19 | 16:17 | 8.80 | 0.6 | 0.300 | 0.6 | 0.120 | 0.0003 | 1.00 | 0.0003 | 0.090 | 0.0000 | 0.0 |
| 20 | 16:20 | 9.10 | 0.6 | 0.200 | 0.6 | 0.080 | 0.4783 | 1.00 | 0.4783 | 0.060 | 0.0287 | 6.8 |
| 21 | 16:20 | 9.40 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |

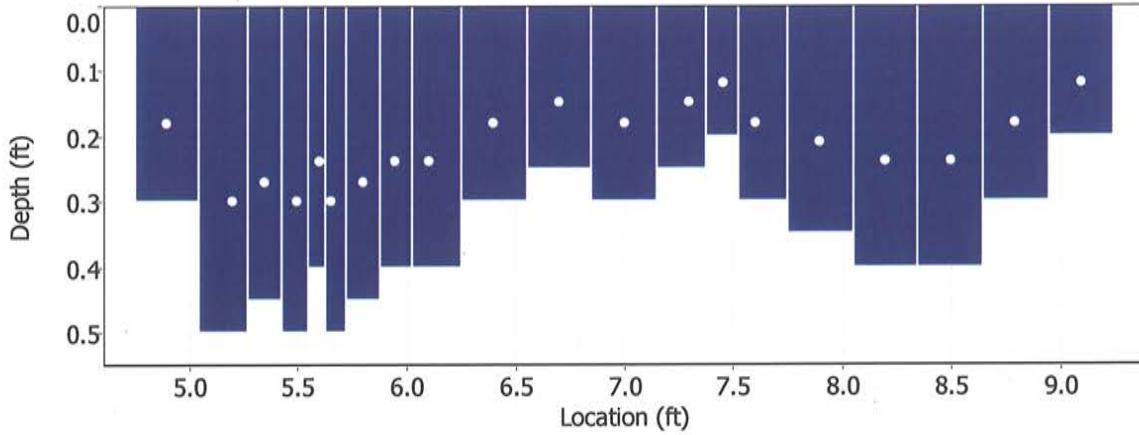
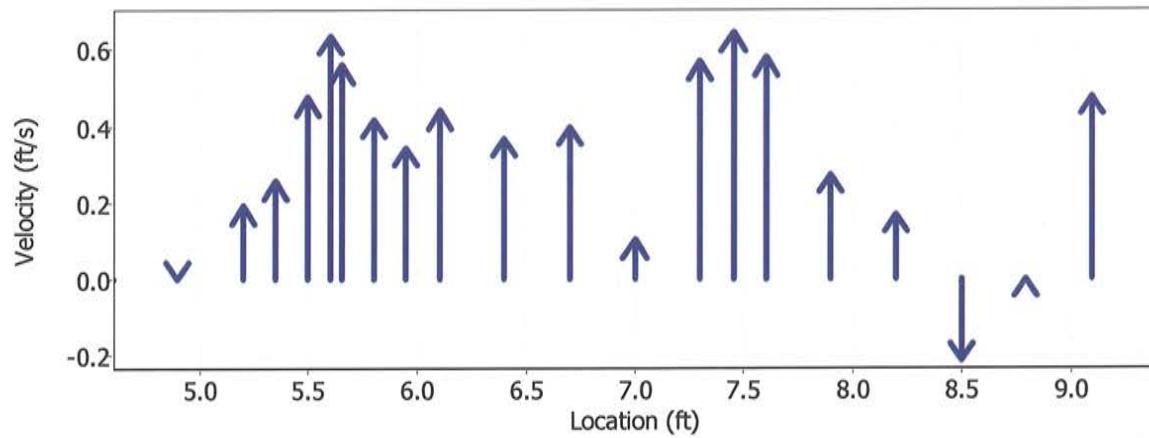
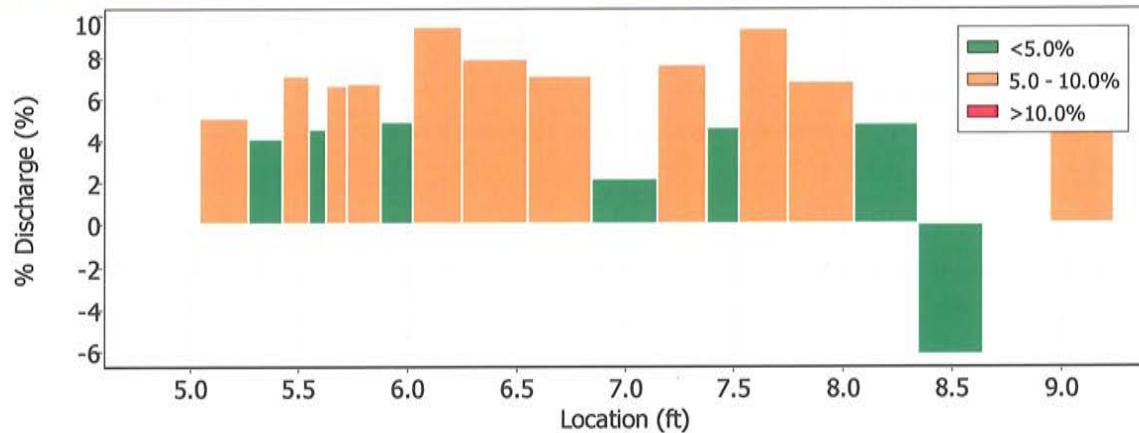
Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

| File Information | | Site Details | |
|---------------------|---------------------|--------------|--------|
| File Name | CSC120.WAD | Site Name | CSC120 |
| Start Date and Time | 2011/09/27 15:44:36 | Operator(s) | JW |





Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

File Name CSC120.WAD
Start Date and Time 2011/09/27 15:44:36

Site Details

Site Name CSC120
Operator(s) JW

Quality Control

| St | Loc | %Dep | Message |
|----|------|------|---|
| 3 | 5.35 | 0.6 | High standard error: 0.040 |
| 4 | 5.50 | 0.6 | High standard error: 0.034 |
| 5 | 5.60 | 0.6 | High standard error: 0.046 |
| 6 | 5.65 | 0.6 | High standard error: 0.039 |
| 7 | 5.80 | 0.6 | High standard error: 0.041 |
| 8 | 5.95 | 0.6 | High standard error: 0.038 |
| 9 | 6.10 | 0.6 | High standard error: 0.033 |
| 12 | 7.00 | 0.6 | High angle: 57 |
| 13 | 7.30 | 0.6 | High standard error: 0.031 |
| 15 | 7.60 | 0.6 | High angle: 25 |
| 16 | 7.90 | 0.6 | High angle: 38 |
| 17 | 8.20 | 0.6 | High angle: 22 |
| 18 | 8.50 | 0.6 | High angle: 165 |
| 19 | 8.80 | 0.6 | SNR (67.7) is different from typical SNR (37.2) |
| 20 | 9.10 | 0.6 | High angle: 22 |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

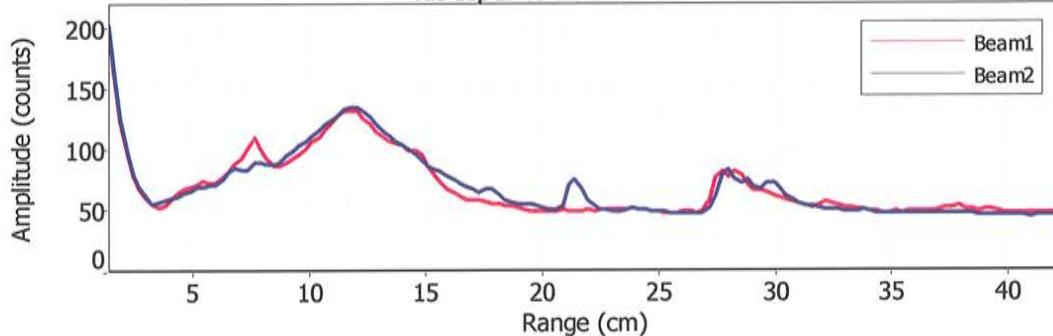
File Name CSC120.WAD
Start Date and Time 2011/09/27 15:44:36

Site Details

Site Name CSC120
Operator(s) JW

Automatic Quality Control Test (BeamCheck)

Tue Sep 27 15:42:42 MDT 2011



- Noise level check - Pass
- SNR check - Pass
- Peak location check - Pass
- Peak shape check - Pass



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

File Name CSC120A.WAD
Start Date and Time 2011/09/27 13:48:41

Site Details

Site Name CSC120A
Operator(s) JW

System Information

Sensor Type FlowTracker
Serial # P3512
CPU Firmware Version 3.7
Software Ver 2.20

Units (English Units)

Distance ft
Velocity ft/s
Area ft²
Discharge cfs

Discharge Uncertainty

| Category | ISO | Stats |
|----------------|-------------|--------------|
| Accuracy | 1.0% | 1.0% |
| Depth | 0.7% | 12.2% |
| Velocity | 4.8% | 55.2% |
| Width | 0.2% | 0.2% |
| Method | 3.5% | - |
| # Stations | 1.2% | - |
| Overall | 6.1% | 56.6% |

Summary

| | | | |
|-----------------|-------------|------------------------|---------------|
| Averaging Int. | 40 | # Stations | 45 |
| Start Edge | REW | Total Width | 9.500 |
| Mean SNR | 28.6 dB | Total Area | 3.550 |
| Mean Temp | 45.65 °F | Mean Depth | 0.374 |
| Disch. Equation | Mid-Section | Mean Velocity | 0.1162 |
| | | Total Discharge | 0.4124 |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

| File Information | | | | Site Details | | | | | | | |
|---------------------|---------------------|--|--|--------------|---------|--|--|--|--|--|--|
| File Name | CSC120A.WAD | | | Site Name | CSC120A | | | | | | |
| Start Date and Time | 2011/09/27 13:48:41 | | | Operator(s) | JW | | | | | | |

| Measurement Results | | | | | | | | | | | | |
|---------------------|--------------|-------------|-------------|--------------|------------|--------------|----------------|-------------|----------------|--------------|----------------|--------------|
| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
| 0 | 13:48 | 0.00 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| 1 | <i>13:48</i> | <i>0.50</i> | <i>0.6</i> | <i>0.300</i> | <i>0.6</i> | <i>0.120</i> | <i>-0.1949</i> | <i>1.00</i> | <i>-0.1949</i> | <i>0.150</i> | <i>-0.0292</i> | <i>-7.1</i> |
| 2 | <i>13:50</i> | <i>1.00</i> | <i>0.6</i> | <i>0.300</i> | <i>0.6</i> | <i>0.120</i> | <i>0.1837</i> | <i>1.00</i> | <i>0.1837</i> | <i>0.105</i> | <i>0.0193</i> | <i>4.7</i> |
| 3 | <i>14:43</i> | <i>1.20</i> | <i>0.6</i> | <i>0.300</i> | <i>0.6</i> | <i>0.120</i> | <i>1.0807</i> | <i>1.00</i> | <i>1.0807</i> | <i>0.037</i> | <i>0.0405</i> | <i>9.8</i> |
| 4 | <i>14:09</i> | <i>1.25</i> | <i>0.6</i> | <i>0.300</i> | <i>0.6</i> | <i>0.120</i> | <i>-0.0367</i> | <i>1.00</i> | <i>-0.0367</i> | <i>0.015</i> | <i>-0.0005</i> | <i>-0.1</i> |
| 5 | <i>14:42</i> | <i>1.30</i> | <i>0.6</i> | <i>0.300</i> | <i>0.6</i> | <i>0.120</i> | <i>1.2365</i> | <i>1.00</i> | <i>1.2365</i> | <i>0.022</i> | <i>0.0278</i> | <i>6.7</i> |
| 6 | <i>14:25</i> | <i>1.40</i> | <i>0.6</i> | <i>0.300</i> | <i>0.6</i> | <i>0.120</i> | <i>1.0823</i> | <i>1.00</i> | <i>1.0823</i> | <i>0.030</i> | <i>0.0325</i> | <i>7.9</i> |
| 7 | <i>13:52</i> | <i>1.50</i> | <i>0.6</i> | <i>0.400</i> | <i>0.6</i> | <i>0.160</i> | <i>1.2490</i> | <i>1.00</i> | <i>1.2490</i> | <i>0.040</i> | <i>0.0500</i> | <i>12.1</i> |
| 8 | <i>14:26</i> | <i>1.60</i> | <i>0.6</i> | <i>0.400</i> | <i>0.6</i> | <i>0.160</i> | <i>1.0269</i> | <i>1.00</i> | <i>1.0269</i> | <i>0.040</i> | <i>0.0411</i> | <i>10.0</i> |
| 9 | <i>14:45</i> | <i>1.70</i> | <i>0.6</i> | <i>0.400</i> | <i>0.6</i> | <i>0.160</i> | <i>0.7684</i> | <i>1.00</i> | <i>0.7684</i> | <i>0.030</i> | <i>0.0230</i> | <i>5.6</i> |
| 10 | <i>14:17</i> | <i>1.75</i> | <i>0.6</i> | <i>0.300</i> | <i>0.6</i> | <i>0.120</i> | <i>-0.0607</i> | <i>1.00</i> | <i>-0.0607</i> | <i>0.015</i> | <i>-0.0009</i> | <i>-0.2</i> |
| 11 | <i>14:10</i> | <i>1.80</i> | <i>0.6</i> | <i>0.200</i> | <i>0.6</i> | <i>0.080</i> | <i>-0.1063</i> | <i>1.00</i> | <i>-0.1063</i> | <i>0.010</i> | <i>-0.0011</i> | <i>-0.3</i> |
| 12 | <i>14:23</i> | <i>1.85</i> | <i>0.6</i> | <i>0.500</i> | <i>0.6</i> | <i>0.200</i> | <i>0.3035</i> | <i>1.00</i> | <i>0.3035</i> | <i>0.050</i> | <i>0.0152</i> | <i>3.7</i> |
| 13 | <i>13:53</i> | <i>2.00</i> | <i>0.6</i> | <i>0.550</i> | <i>0.6</i> | <i>0.220</i> | <i>0.0686</i> | <i>1.00</i> | <i>0.0686</i> | <i>0.179</i> | <i>0.0123</i> | <i>3.0</i> |
| 14 | <i>13:55</i> | <i>2.50</i> | <i>0.6</i> | <i>0.350</i> | <i>0.6</i> | <i>0.140</i> | <i>-0.1470</i> | <i>1.00</i> | <i>-0.1470</i> | <i>0.131</i> | <i>-0.0193</i> | <i>-4.7</i> |
| 15 | <i>14:28</i> | <i>2.75</i> | <i>0.6</i> | <i>0.400</i> | <i>0.6</i> | <i>0.160</i> | <i>-0.2628</i> | <i>1.00</i> | <i>-0.2628</i> | <i>0.100</i> | <i>-0.0263</i> | <i>-6.4</i> |
| 16 | <i>13:57</i> | <i>3.00</i> | <i>0.6</i> | <i>0.600</i> | <i>0.6</i> | <i>0.240</i> | <i>-0.2530</i> | <i>1.00</i> | <i>-0.2530</i> | <i>0.150</i> | <i>-0.0379</i> | <i>-9.2</i> |
| 17 | <i>14:30</i> | <i>3.25</i> | <i>0.6</i> | <i>0.400</i> | <i>0.6</i> | <i>0.160</i> | <i>-0.2687</i> | <i>1.00</i> | <i>-0.2687</i> | <i>0.100</i> | <i>-0.0269</i> | <i>-6.5</i> |
| 18 | <i>13:58</i> | <i>3.50</i> | <i>0.6</i> | <i>0.500</i> | <i>0.6</i> | <i>0.200</i> | <i>-0.3802</i> | <i>1.00</i> | <i>-0.3802</i> | <i>0.188</i> | <i>-0.0713</i> | <i>-17.3</i> |
| 19 | <i>13:59</i> | <i>4.00</i> | <i>0.6</i> | <i>0.700</i> | <i>0.6</i> | <i>0.280</i> | <i>-0.1201</i> | <i>1.00</i> | <i>-0.1201</i> | <i>0.263</i> | <i>-0.0315</i> | <i>-7.6</i> |
| 20 | <i>14:32</i> | <i>4.25</i> | <i>0.6</i> | <i>0.200</i> | <i>0.6</i> | <i>0.080</i> | <i>-0.0266</i> | <i>1.00</i> | <i>-0.0266</i> | <i>0.040</i> | <i>-0.0011</i> | <i>-0.3</i> |
| 21 | <i>14:49</i> | <i>4.40</i> | <i>0.6</i> | <i>0.800</i> | <i>0.6</i> | <i>0.320</i> | <i>0.0325</i> | <i>1.00</i> | <i>0.0325</i> | <i>0.100</i> | <i>0.0032</i> | <i>0.8</i> |
| 22 | <i>14:00</i> | <i>4.50</i> | <i>0.6</i> | <i>0.700</i> | <i>0.6</i> | <i>0.280</i> | <i>-0.1335</i> | <i>1.00</i> | <i>-0.1335</i> | <i>0.123</i> | <i>-0.0164</i> | <i>-4.0</i> |
| 23 | <i>14:31</i> | <i>4.75</i> | <i>0.6</i> | <i>0.700</i> | <i>0.6</i> | <i>0.280</i> | <i>-0.0554</i> | <i>1.00</i> | <i>-0.0554</i> | <i>0.105</i> | <i>-0.0058</i> | <i>-1.4</i> |
| 24 | <i>14:51</i> | <i>4.80</i> | <i>0.6</i> | <i>0.800</i> | <i>0.6</i> | <i>0.320</i> | <i>0.0466</i> | <i>1.00</i> | <i>0.0466</i> | <i>0.060</i> | <i>0.0028</i> | <i>0.7</i> |
| 25 | <i>14:50</i> | <i>4.90</i> | <i>0.6</i> | <i>0.800</i> | <i>0.6</i> | <i>0.320</i> | <i>0.1637</i> | <i>1.00</i> | <i>0.1637</i> | <i>0.060</i> | <i>0.0098</i> | <i>2.4</i> |
| 26 | <i>15:05</i> | <i>4.95</i> | <i>0.6</i> | <i>0.800</i> | <i>0.6</i> | <i>0.320</i> | <i>0.1050</i> | <i>1.00</i> | <i>0.1050</i> | <i>0.040</i> | <i>0.0042</i> | <i>1.0</i> |
| 27 | <i>14:01</i> | <i>5.00</i> | <i>0.6</i> | <i>0.800</i> | <i>0.6</i> | <i>0.320</i> | <i>0.8691</i> | <i>1.00</i> | <i>0.8691</i> | <i>0.040</i> | <i>0.0347</i> | <i>8.4</i> |
| 28 | <i>15:06</i> | <i>5.05</i> | <i>0.6</i> | <i>0.800</i> | <i>0.6</i> | <i>0.320</i> | <i>0.2431</i> | <i>1.00</i> | <i>0.2431</i> | <i>0.040</i> | <i>0.0097</i> | <i>2.4</i> |
| 29 | <i>14:40</i> | <i>5.10</i> | <i>0.6</i> | <i>0.800</i> | <i>0.6</i> | <i>0.320</i> | <i>0.7769</i> | <i>1.00</i> | <i>0.7769</i> | <i>0.040</i> | <i>0.0311</i> | <i>7.5</i> |
| 30 | <i>15:01</i> | <i>5.15</i> | <i>0.6</i> | <i>0.850</i> | <i>0.6</i> | <i>0.340</i> | <i>0.5390</i> | <i>1.00</i> | <i>0.5390</i> | <i>0.043</i> | <i>0.0229</i> | <i>5.6</i> |
| 31 | <i>14:47</i> | <i>5.20</i> | <i>0.6</i> | <i>0.800</i> | <i>0.6</i> | <i>0.320</i> | <i>1.3143</i> | <i>1.00</i> | <i>1.3143</i> | <i>0.040</i> | <i>0.0526</i> | <i>12.8</i> |
| 32 | <i>14:34</i> | <i>5.25</i> | <i>0.6</i> | <i>0.800</i> | <i>0.6</i> | <i>0.320</i> | <i>0.9636</i> | <i>1.00</i> | <i>0.9636</i> | <i>0.040</i> | <i>0.0384</i> | <i>9.3</i> |
| 33 | <i>14:59</i> | <i>5.30</i> | <i>0.6</i> | <i>0.900</i> | <i>0.6</i> | <i>0.360</i> | <i>0.7093</i> | <i>1.00</i> | <i>0.7093</i> | <i>0.045</i> | <i>0.0319</i> | <i>7.7</i> |
| 34 | <i>14:36</i> | <i>5.35</i> | <i>0.6</i> | <i>0.800</i> | <i>0.6</i> | <i>0.320</i> | <i>0.9895</i> | <i>1.00</i> | <i>0.9895</i> | <i>0.040</i> | <i>0.0396</i> | <i>9.6</i> |
| 35 | <i>15:02</i> | <i>5.40</i> | <i>0.6</i> | <i>0.900</i> | <i>0.6</i> | <i>0.360</i> | <i>0.8340</i> | <i>1.00</i> | <i>0.8340</i> | <i>0.045</i> | <i>0.0376</i> | <i>9.1</i> |
| 36 | <i>14:56</i> | <i>5.45</i> | <i>0.6</i> | <i>0.900</i> | <i>0.6</i> | <i>0.360</i> | <i>0.8451</i> | <i>1.00</i> | <i>0.8451</i> | <i>0.045</i> | <i>0.0381</i> | <i>9.2</i> |
| 37 | <i>14:04</i> | <i>5.50</i> | <i>0.6</i> | <i>0.800</i> | <i>0.6</i> | <i>0.320</i> | <i>0.9626</i> | <i>1.00</i> | <i>0.9626</i> | <i>0.060</i> | <i>0.0577</i> | <i>14.0</i> |
| 38 | <i>14:38</i> | <i>5.60</i> | <i>0.6</i> | <i>0.800</i> | <i>0.6</i> | <i>0.320</i> | <i>-0.0003</i> | <i>1.00</i> | <i>-0.0003</i> | <i>0.200</i> | <i>-0.0001</i> | <i>0.0</i> |
| 39 | <i>14:07</i> | <i>6.00</i> | <i>0.6</i> | <i>0.200</i> | <i>0.6</i> | <i>0.080</i> | <i>0.0387</i> | <i>1.00</i> | <i>0.0387</i> | <i>0.090</i> | <i>0.0035</i> | <i>0.8</i> |
| 40 | <i>14:08</i> | <i>6.50</i> | <i>0.6</i> | <i>0.200</i> | <i>0.6</i> | <i>0.080</i> | <i>0.0125</i> | <i>1.00</i> | <i>0.0125</i> | <i>0.200</i> | <i>0.0025</i> | <i>0.6</i> |
| 41 | <i>14:11</i> | <i>8.00</i> | <i>0.6</i> | <i>0.200</i> | <i>0.6</i> | <i>0.080</i> | <i>-0.1096</i> | <i>1.00</i> | <i>-0.1096</i> | <i>0.200</i> | <i>-0.0219</i> | <i>-5.3</i> |
| 42 | <i>14:12</i> | <i>8.50</i> | <i>0.6</i> | <i>0.200</i> | <i>0.6</i> | <i>0.080</i> | <i>0.0085</i> | <i>1.00</i> | <i>0.0085</i> | <i>0.100</i> | <i>0.0009</i> | <i>0.2</i> |
| 43 | <i>14:14</i> | <i>9.00</i> | <i>0.6</i> | <i>0.200</i> | <i>0.6</i> | <i>0.080</i> | <i>0.1975</i> | <i>1.00</i> | <i>0.1975</i> | <i>0.100</i> | <i>0.0198</i> | <i>4.8</i> |
| 44 | <i>14:14</i> | <i>9.50</i> | <i>None</i> | <i>0.000</i> | <i>0.0</i> | <i>0.0</i> | <i>0.0000</i> | <i>1.00</i> | <i>0.0000</i> | <i>0.000</i> | <i>0.0000</i> | <i>0.0</i> |

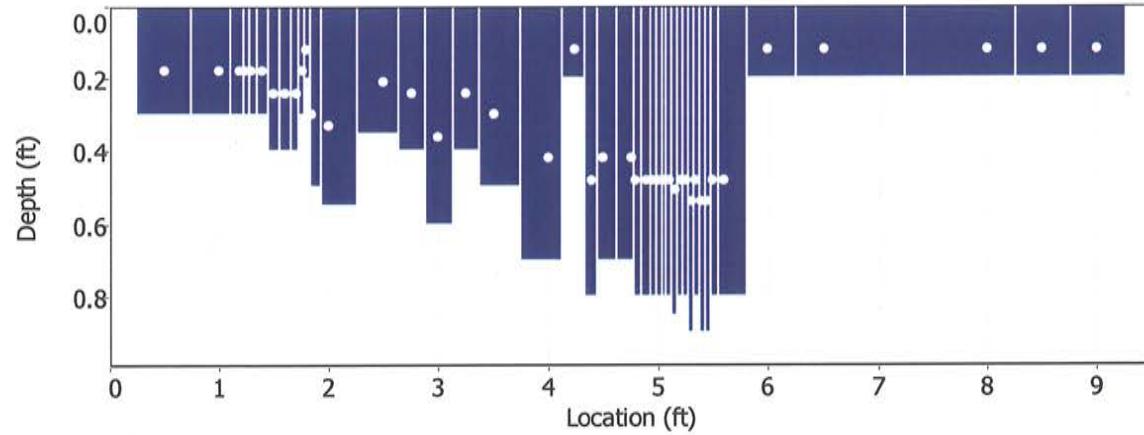
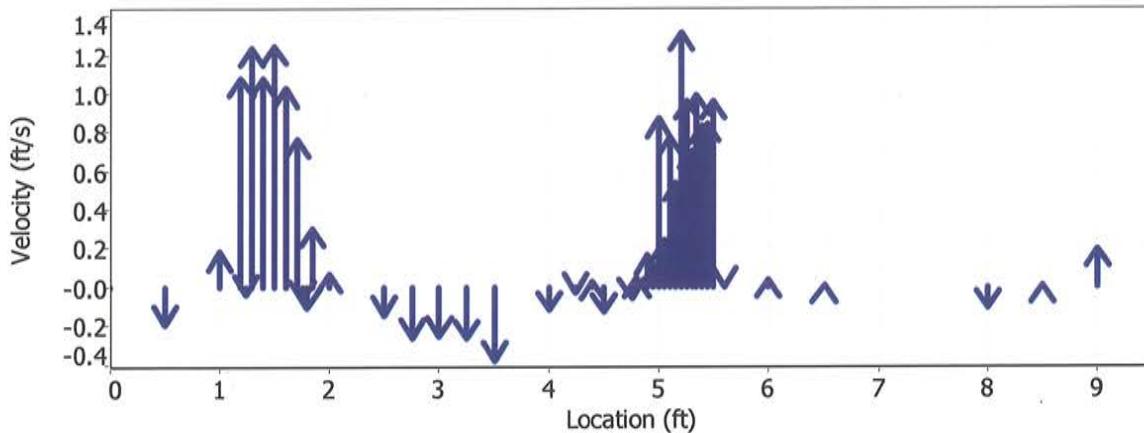
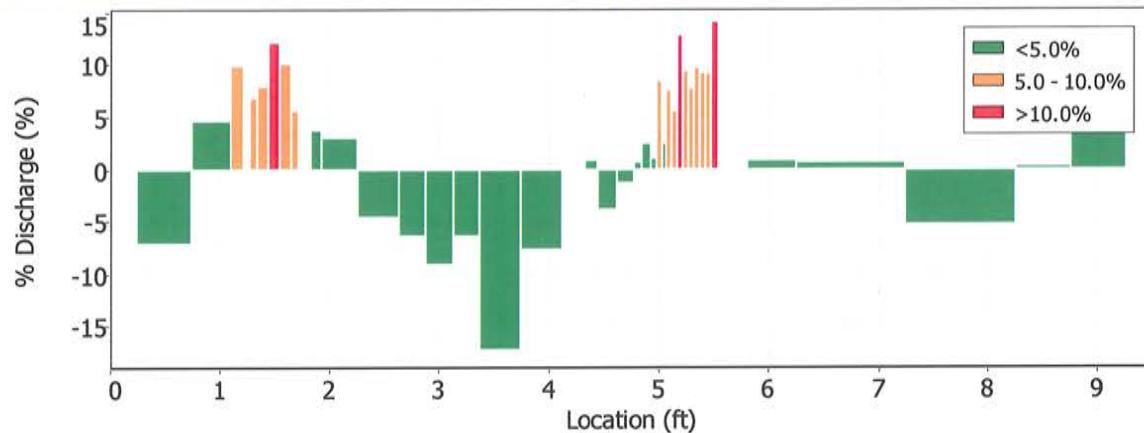
Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

| File Information | | Site Details | |
|---------------------|---------------------|--------------|---------|
| File Name | CSC120A.WAD | Site Name | CSC120A |
| Start Date and Time | 2011/09/27 13:48:41 | Operator(s) | JW |





Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

| File Information | | | Site Details |
|------------------|-------------|---------------------|---|
| File Name | CSC120A.WAD | Start Date and Time | Date Generated: Wed Jan 25 2012 |
| St | Loc | %Dep | Message |
| 1 | 0.50 | 0.6 | High angle: -172 |
| 2 | 1.00 | 0.6 | High angle: 53 |
| 3 | 1.20 | 0.6 | High standard error: 0.103 |
| 4 | 1.25 | 0.6 | High angle: -101 |
| 5 | 1.30 | 0.6 | High standard error: 0.117 |
| 6 | 1.40 | 0.6 | High standard error: 0.073 |
| 8 | 1.60 | 0.6 | High angle: 22 |
| 10 | 1.75 | 0.6 | High angle: 112 |
| 11 | 1.80 | 0.6 | High angle: -138 |
| 13 | 2.00 | 0.6 | High angle: -30 |
| 14 | 2.50 | 0.6 | High angle: -141 |
| 15 | 2.75 | 0.6 | High angle: -160 |
| 16 | 3.00 | 0.6 | High angle: -173 |
| 17 | 3.25 | 0.6 | High angle: 166 |
| 18 | 3.50 | 0.6 | High angle: 166 |
| 19 | 4.00 | 0.6 | High angle: 157 |
| 20 | 4.25 | 0.6 | High angle: 98 0.6 High SNR variation during measurement: 4.3,5.2 |
| 21 | 4.40 | 0.6 | High angle: 82 |
| 22 | 4.50 | 0.6 | High angle: 134 |
| 23 | 4.75 | 0.6 | High angle: 106 |
| 24 | 4.80 | 0.6 | High angle: 71 |
| 25 | 4.90 | 0.6 | High angle: 56 |
| 26 | 4.95 | 0.6 | High angle: 43 |
| 27 | 5.00 | 0.6 | High angle: 22 0.6 High standard error: 0.097 |
| 28 | 5.05 | 0.6 | High angle: 34 |
| 29 | 5.10 | 0.6 | High standard error: 0.093 |
| 30 | 5.15 | 0.6 | High angle: 25 |
| 31 | 5.20 | 0.6 | High standard error: 0.084 |
| 32 | 5.25 | 0.6 | High standard error: 0.084 |
| 34 | 5.35 | 0.6 | High standard error: 0.083 |
| 37 | 5.50 | 0.6 | Boundary QC is Fair; possible boundary interference |
| 38 | 5.60 | 0.6 | SNR (67.0) is different from typical SNR (28.6) |
| 39 | 6.00 | 0.6 | High angle: -77 |
| 40 | 6.50 | 0.6 | High SNR variation during measurement: 5.2,6.0 |
| 41 | 8.00 | 0.6 | High angle: -142 |
| 43 | 9.00 | 0.6 | High standard error: 0.081 0.6 Boundary QC is Poor; possible boundary interference |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

File Name
Start Date and Time

CSC120A.WAD
2011/09/27 13:48:41

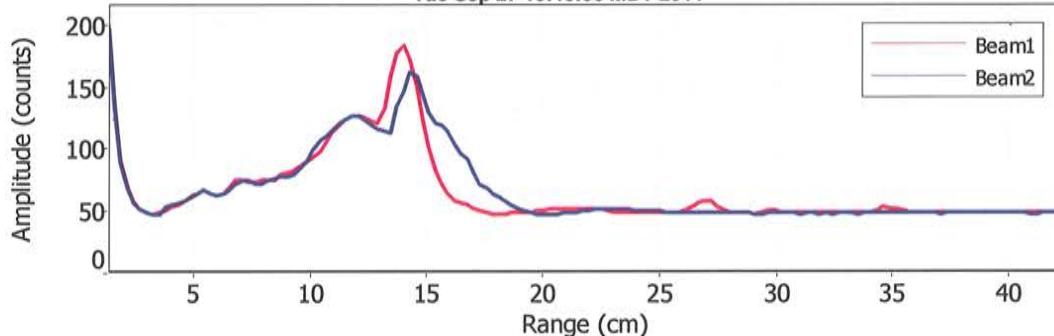
Site Details

Site Name
Operator(s)

CSC120A
JW

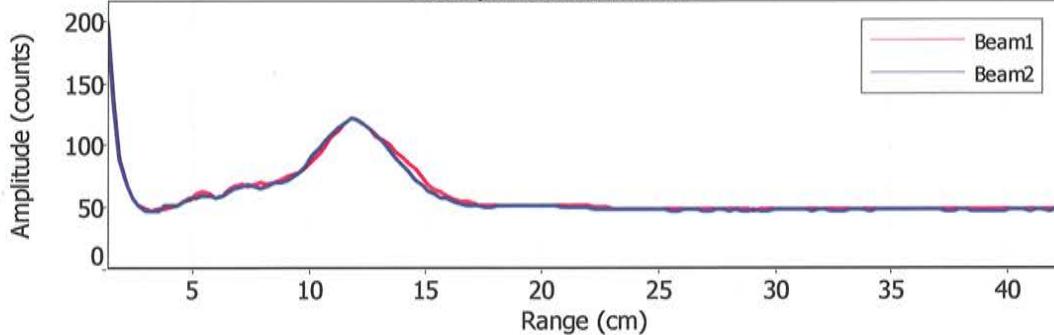
Automatic Quality Control Test (BeamCheck)

Tue Sep 27 13:45:56 MDT 2011



- Noise level check - Pass
- SNR check - Pass
- Peak location check - Fail
- Peak shape check - Fail

Tue Sep 27 13:46:46 MDT 2011



- Noise level check - Pass
- SNR check - Pass
- Peak location check - Pass
- Peak shape check - Pass



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

| File Information | | Site Details | |
|------------------------------|---------------------|------------------------|-----------------|
| File Name | OPP1.WAD | Site Name | OPP1 |
| Start Date and Time | 2011/09/27 09:13:36 | Operator(s) | JW |
| System Information | | | |
| Sensor Type | FlowTracker | Units | (English Units) |
| Serial # | P3512 | Distance | ft |
| CPU Firmware Version | 3.7 | Velocity | ft/s |
| Software Ver | 2.20 | Area | ft^2 |
| | | Discharge | cfs |
| Summary | | | |
| Averaging Int. | 40 | # Stations | 31 |
| Start Edge | REW | Total Width | 11.094 |
| Mean SNR | 31.3 dB | Total Area | 4.888 |
| Mean Temp | 43.69 °F | Mean Depth | 0.441 |
| Disch. Equation | Mid-Section | Mean Velocity | 0.1617 |
| | | Total Discharge | 0.7905 |
| Discharge Uncertainty | | | |
| Category | ISO | Stats | |
| Accuracy | 1.0% | 1.0% | |
| Depth | 0.4% | 5.4% | |
| Velocity | 1.3% | 15.1% | |
| Width | 0.1% | 0.1% | |
| Method | 1.9% | - | |
| # Stations | 1.7% | - | |
| Overall | 3.0% | 16.1% | |

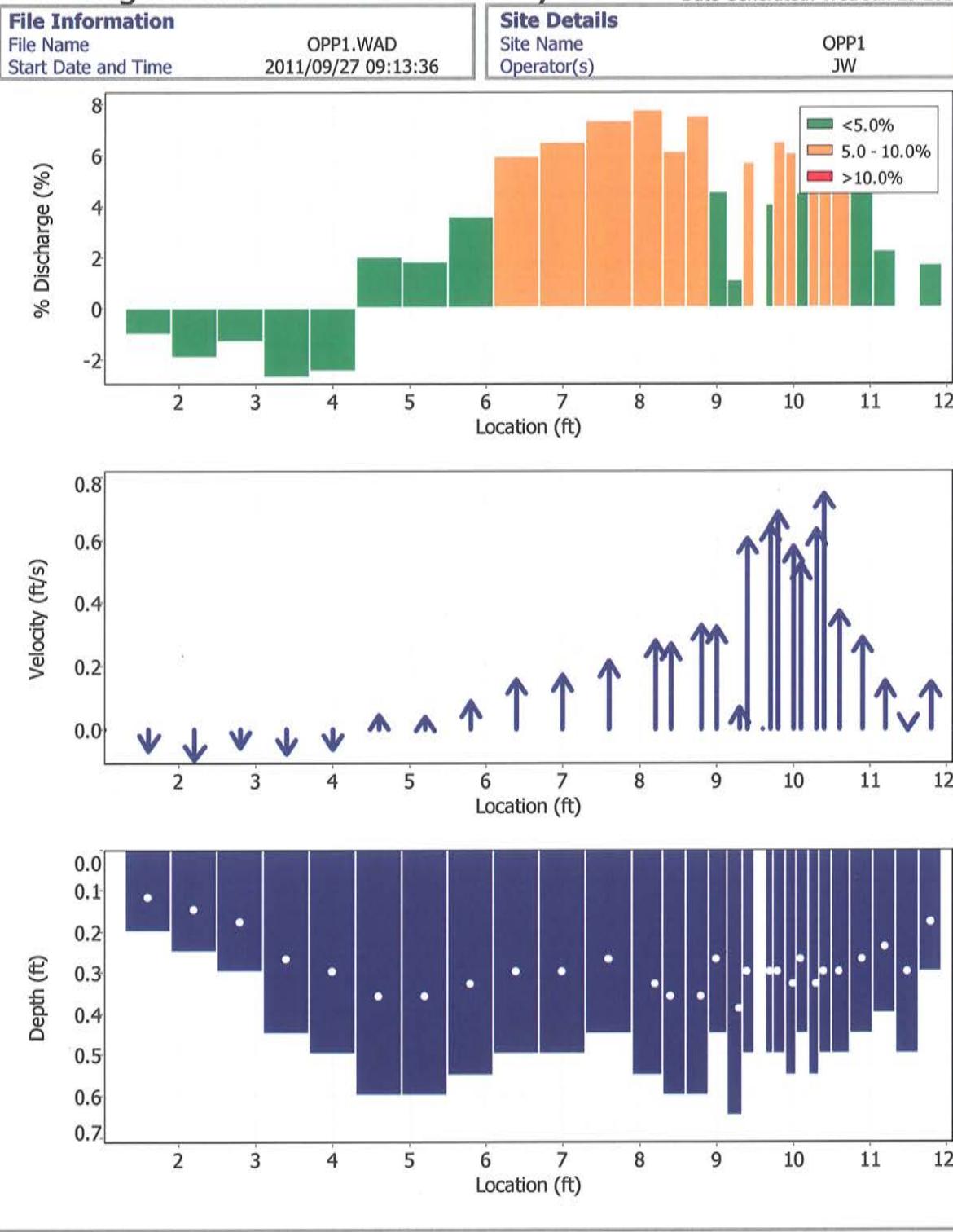
| Measurement Results | | | | | | | | | | | | |
|---------------------|-------|-------|--------|-------|------|-------|---------|----------|---------|-------|---------|------|
| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
| 0 | 09:13 | 1.00 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| 1 | 09:14 | 1.60 | 0.6 | 0.200 | 0.6 | 0.080 | -0.0669 | 1.00 | -0.0669 | 0.120 | -0.0080 | -1.0 |
| 2 | 09:16 | 2.20 | 0.6 | 0.250 | 0.6 | 0.100 | -0.1007 | 1.00 | -0.1007 | 0.150 | -0.0151 | -1.9 |
| 3 | 09:17 | 2.80 | 0.6 | 0.300 | 0.6 | 0.120 | -0.0584 | 1.00 | -0.0584 | 0.180 | -0.0105 | -1.3 |
| 4 | 09:18 | 3.40 | 0.6 | 0.450 | 0.6 | 0.180 | -0.0794 | 1.00 | -0.0794 | 0.270 | -0.0214 | -2.7 |
| 5 | 09:20 | 4.00 | 0.6 | 0.500 | 0.6 | 0.200 | -0.0653 | 1.00 | -0.0653 | 0.300 | -0.0196 | -2.5 |
| 6 | 09:21 | 4.60 | 0.6 | 0.600 | 0.6 | 0.240 | 0.0443 | 1.00 | 0.0443 | 0.360 | 0.0159 | 2.0 |
| 7 | 09:22 | 5.20 | 0.6 | 0.600 | 0.6 | 0.240 | 0.0404 | 1.00 | 0.0404 | 0.360 | 0.0145 | 1.8 |
| 8 | 09:23 | 5.80 | 0.6 | 0.550 | 0.6 | 0.220 | 0.0863 | 1.00 | 0.0863 | 0.330 | 0.0285 | 3.6 |
| 9 | 09:25 | 6.40 | 0.6 | 0.500 | 0.6 | 0.200 | 0.1572 | 1.00 | 0.1572 | 0.300 | 0.0472 | 6.0 |
| 10 | 09:27 | 7.00 | 0.6 | 0.500 | 0.6 | 0.200 | 0.1706 | 1.00 | 0.1706 | 0.300 | 0.0512 | 6.5 |
| 11 | 09:28 | 7.60 | 0.6 | 0.450 | 0.6 | 0.180 | 0.2146 | 1.00 | 0.2146 | 0.270 | 0.0580 | 7.3 |
| 12 | 09:29 | 8.20 | 0.6 | 0.550 | 0.6 | 0.220 | 0.2785 | 1.00 | 0.2785 | 0.220 | 0.0612 | 7.7 |
| 13 | 09:46 | 8.40 | 0.6 | 0.600 | 0.6 | 0.240 | 0.2684 | 1.00 | 0.2684 | 0.180 | 0.0483 | 6.1 |
| 14 | 09:30 | 8.80 | 0.6 | 0.600 | 0.6 | 0.240 | 0.3301 | 1.00 | 0.3301 | 0.180 | 0.0594 | 7.5 |
| 15 | 09:48 | 9.00 | 0.6 | 0.450 | 0.6 | 0.180 | 0.3215 | 1.00 | 0.3215 | 0.112 | 0.0361 | 4.6 |
| 16 | 09:59 | 9.30 | 0.6 | 0.650 | 0.6 | 0.260 | 0.0669 | 1.00 | 0.0669 | 0.130 | 0.0087 | 1.1 |
| 17 | 09:31 | 9.40 | 0.6 | 0.500 | 0.6 | 0.200 | 0.6037 | 1.00 | 0.6037 | 0.075 | 0.0453 | 5.7 |
| 18 | 09:54 | 9.60 | 0.6 | 0.000 | 0.6 | 0.120 | 0.5026 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| 19 | 09:33 | 9.70 | 0.6 | 0.500 | 0.6 | 0.200 | 0.6447 | 1.00 | 0.6447 | 0.050 | 0.0322 | 4.1 |
| 20 | 09:52 | 9.80 | 0.6 | 0.500 | 0.6 | 0.200 | 0.6867 | 1.00 | 0.6867 | 0.075 | 0.0514 | 6.5 |
| 21 | 09:34 | 10.00 | 0.6 | 0.550 | 0.6 | 0.220 | 0.5784 | 1.00 | 0.5784 | 0.083 | 0.0477 | 6.0 |
| 22 | 09:55 | 10.10 | 0.6 | 0.450 | 0.6 | 0.180 | 0.5243 | 1.00 | 0.5243 | 0.067 | 0.0353 | 4.5 |
| 23 | 09:35 | 10.30 | 0.6 | 0.550 | 0.6 | 0.220 | 0.6325 | 1.00 | 0.6325 | 0.082 | 0.0521 | 6.6 |
| 24 | 09:57 | 10.40 | 0.6 | 0.500 | 0.6 | 0.200 | 0.7470 | 1.00 | 0.7470 | 0.075 | 0.0559 | 7.1 |
| 25 | 09:36 | 10.60 | 0.6 | 0.500 | 0.6 | 0.200 | 0.3730 | 1.00 | 0.3730 | 0.124 | 0.0464 | 5.9 |
| 26 | 09:38 | 10.90 | 0.6 | 0.450 | 0.6 | 0.180 | 0.2897 | 1.00 | 0.2897 | 0.135 | 0.0390 | 4.9 |
| 27 | 09:40 | 11.20 | 0.6 | 0.400 | 0.6 | 0.160 | 0.1499 | 1.00 | 0.1499 | 0.120 | 0.0179 | 2.3 |
| 28 | 09:41 | 11.50 | 0.6 | 0.500 | 0.6 | 0.200 | -0.0030 | 1.00 | -0.0030 | 0.150 | -0.0004 | -0.1 |
| 29 | 09:43 | 11.79 | 0.6 | 0.300 | 0.6 | 0.120 | 0.1493 | 1.00 | 0.1493 | 0.090 | 0.0134 | 1.7 |
| 30 | 09:43 | 12.09 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012





Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

File Name OPP1.WAD
Start Date and Time 2011/09/27 09:13:36

Site Details

Site Name OPP1
Operator(s) JW

Quality Control

| St | Loc | %Dep | Message |
|----|-------|------|---|
| 1 | 1.60 | 0.6 | High angle: -130 |
| 2 | 2.20 | 0.6 | High angle: -174 |
| 3 | 2.80 | 0.6 | High angle: -144 |
| 4 | 3.40 | 0.6 | High angle: -137 |
| 5 | 4.00 | 0.6 | High angle: -135 |
| 6 | 4.60 | 0.6 | High angle: -69 |
| 7 | 5.20 | 0.6 | High angle: -65 |
| 8 | 5.80 | 0.6 | High angle: -29 |
| 16 | 9.30 | 0.6 | High angle: 26 |
| 18 | 9.60 | 0.6 | High standard error: 0.032 |
| 25 | 10.60 | 0.6 | High standard error: 0.033 |
| 26 | 10.90 | 0.6 | Boundary QC is Fair; possible boundary interference |
| 27 | 11.20 | 0.6 | High angle: -62 |
| 28 | 11.50 | 0.6 | SNR (54.8) is different from typical SNR (31.3) |
| 29 | 11.79 | 0.6 | High angle: -43 |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

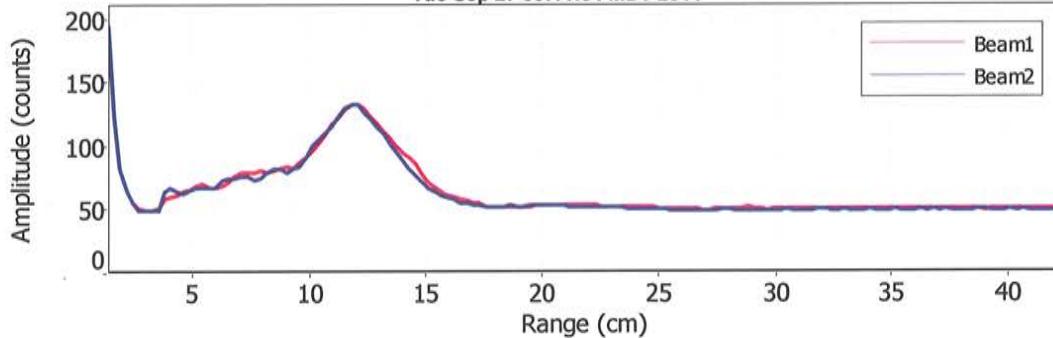
File Name OPP1.WAD
Start Date and Time 2011/09/27 09:13:36

Site Details

Site Name OPP1
Operator(s) JW

Automatic Quality Control Test (BeamCheck)

Tue Sep 27 09:11:54 MDT 2011



- Noise level check - Pass
- SNR check - Pass
- Peak location check - Pass
- Peak shape check - Pass



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

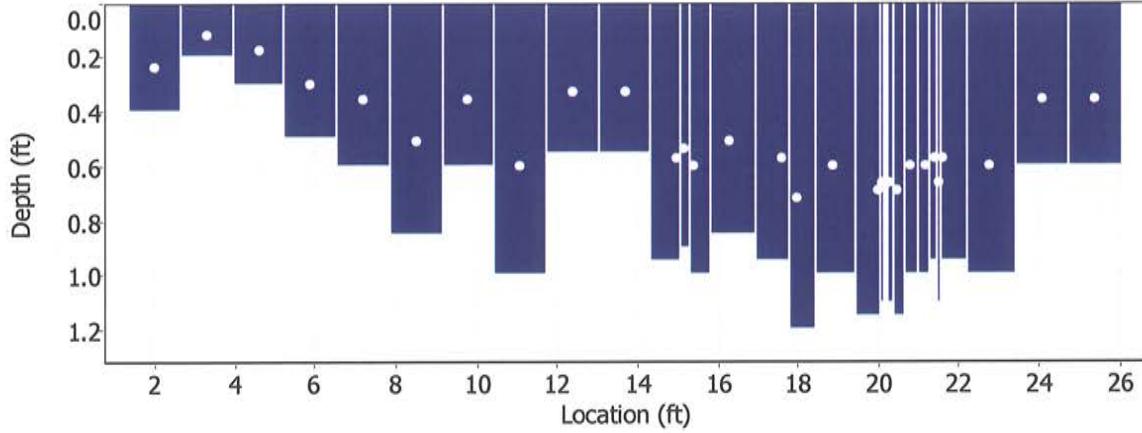
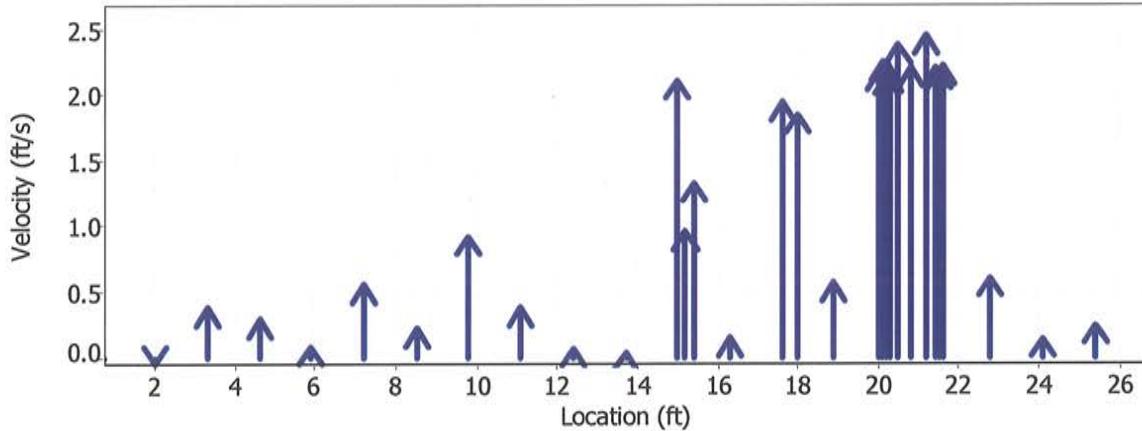
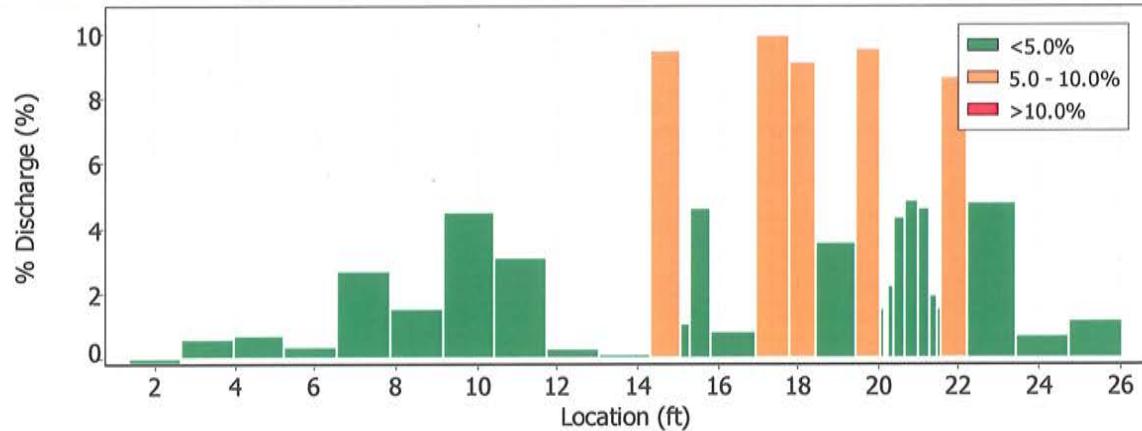
| File Information | | | | Site Details | | | | | | | | | |
|----------------------------|---------------------|------------------------|----------------|------------------------------|-------|-------|------|------------------------------|-------------|--------------|-------|---------|------|
| File Name | ST004.WAD | | | Site Name | ST004 | | | | | | | | |
| Start Date and Time | 2011/09/28 09:49:05 | | | Operator(s) | RB | | | | | | | | |
| System Information | | | | Units (English Units) | | | | Discharge Uncertainty | | | | | |
| Sensor Type | FlowTracker | Distance | ft | Category | ISO | Stats | | Accuracy | 1.0% | 1.0% | | | |
| Serial # | P3512 | Velocity | ft/s | Depth | 0.3% | 3.5% | | Method | 1.9% | - | | | |
| CPU Firmware Version | 3.7 | Area | ft^2 | Velocity | 1.6% | 11.2% | | # Stations | 1.6% | - | | | |
| Software Ver | 2.20 | Discharge | cfs | Width | 0.1% | 0.1% | | Overall | 3.1% | 11.8% | | | |
| Summary | | | | | | | | | | | | | |
| Averaging Int. | Varies | # Stations | 33 | | | | | | | | | | |
| Start Edge | REW | Total Width | 25.997 | | | | | | | | | | |
| Mean SNR | 28.7 dB | Total Area | 17.871 | | | | | | | | | | |
| Mean Temp | 45.32 °F | Mean Depth | 0.687 | | | | | | | | | | |
| Disch. Equation | Mid-Section | Mean Velocity | 0.8854 | | | | | | | | | | |
| | | Total Discharge | 15.8231 | | | | | | | | | | |
| Measurement Results | | | | | | | | | | | | | |
| St | Clock | Loc | Method | Depth | %Dep | MeasD | Npts | Vel | CorrFact | MeanV | Area | Flow | %Q |
| 0 | 09:49 | 0.70 | None | 0.000 | 0.0 | 0.0 | 0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| 1 | 09:50 | 2.00 | 0.6 | 0.400 | 0.6 | 0.160 | 40 | -0.0522 | 1.00 | -0.0522 | 0.520 | -0.0271 | -0.2 |
| 2 | 09:52 | 3.30 | 0.6 | 0.200 | 0.6 | 0.080 | 40 | 0.3809 | 1.00 | 0.3809 | 0.260 | 0.0991 | 0.6 |
| 3 | 09:53 | 4.60 | 0.6 | 0.300 | 0.6 | 0.120 | 40 | 0.2949 | 1.00 | 0.2949 | 0.390 | 0.1150 | 0.7 |
| 4 | 09:56 | 5.90 | 0.6 | 0.500 | 0.6 | 0.200 | 40 | 0.0853 | 1.00 | 0.0853 | 0.650 | 0.0554 | 0.4 |
| 5 | 09:57 | 7.20 | 0.6 | 0.600 | 0.6 | 0.240 | 40 | 0.5505 | 1.00 | 0.5505 | 0.780 | 0.4294 | 2.7 |
| 6 | 09:59 | 8.50 | 0.6 | 0.850 | 0.6 | 0.340 | 40 | 0.2201 | 1.00 | 0.2201 | 1.105 | 0.2433 | 1.5 |
| 7 | 10:00 | 9.80 | 0.6 | 0.600 | 0.6 | 0.240 | 40 | 0.9193 | 1.00 | 0.9193 | 0.780 | 0.7171 | 4.5 |
| 8 | 10:01 | 11.10 | 0.6 | 1.000 | 0.6 | 0.400 | 40 | 0.3770 | 1.00 | 0.3770 | 1.300 | 0.4900 | 3.1 |
| 9 | 10:03 | 12.40 | 0.6 | 0.550 | 0.6 | 0.220 | 10 | 0.0705 | 1.00 | 0.0705 | 0.715 | 0.0504 | 0.3 |
| 10 | 10:03 | 13.70 | 0.6 | 0.550 | 0.6 | 0.220 | 40 | 0.0302 | 1.00 | 0.0302 | 0.715 | 0.0216 | 0.1 |
| 11 | 10:04 | 15.00 | 0.6 | 0.950 | 0.6 | 0.380 | 40 | 2.1053 | 1.00 | 2.1053 | 0.713 | 1.5016 | 9.5 |
| 12 | 10:34 | 15.20 | 0.6 | 0.900 | 0.6 | 0.360 | 40 | 0.9573 | 1.00 | 0.9573 | 0.181 | 0.1728 | 1.1 |
| 13 | 10:17 | 15.40 | 0.6 | 1.000 | 0.6 | 0.400 | 40 | 1.3291 | 1.00 | 1.3291 | 0.549 | 0.7299 | 4.6 |
| 14 | 10:05 | 16.30 | 0.6 | 0.850 | 0.6 | 0.340 | 40 | 0.1453 | 1.00 | 0.1453 | 0.934 | 0.1358 | 0.9 |
| 15 | 10:07 | 17.60 | 0.6 | 0.950 | 0.6 | 0.380 | 40 | 1.9386 | 1.00 | 1.9386 | 0.808 | 1.5670 | 9.9 |
| 16 | 10:18 | 18.00 | 0.6 | 1.200 | 0.6 | 0.480 | 40 | 1.8455 | 1.00 | 1.8455 | 0.780 | 1.4395 | 9.1 |
| 17 | 10:08 | 18.90 | 0.6 | 1.000 | 0.6 | 0.400 | 40 | 0.5686 | 1.00 | 0.5686 | 1.000 | 0.5686 | 3.6 |
| 18 | 10:32 | 20.00 | 0.6 | 1.150 | 0.6 | 0.460 | 40 | 2.1742 | 1.00 | 2.1742 | 0.691 | 1.5023 | 9.5 |
| 19 | 10:31 | 20.10 | 0.6 | 1.100 | 0.6 | 0.440 | 40 | 2.2425 | 1.00 | 2.2425 | 0.109 | 0.2444 | 1.5 |
| 20 | 10:09 | 20.20 | 0.6 | 1.100 | 0.6 | 0.440 | 40 | 2.2461 | 1.00 | 2.2461 | 0.055 | 0.1236 | 0.8 |
| 21 | 10:29 | 20.20 | 0.6 | 1.100 | 0.6 | 0.440 | 40 | 2.1381 | 1.00 | 2.1381 | 0.056 | 0.1196 | 0.8 |
| 22 | 10:25 | 20.30 | 0.6 | 1.100 | 0.6 | 0.440 | 40 | 2.1535 | 1.00 | 2.1535 | 0.165 | 0.3552 | 2.2 |
| 23 | 10:23 | 20.50 | 0.6 | 1.150 | 0.6 | 0.460 | 40 | 2.3783 | 1.00 | 2.3783 | 0.287 | 0.6837 | 4.3 |
| 24 | 10:20 | 20.80 | 0.6 | 1.000 | 0.6 | 0.400 | 40 | 2.2044 | 1.00 | 2.2044 | 0.350 | 0.7717 | 4.9 |
| 25 | 10:22 | 21.20 | 0.6 | 1.000 | 0.6 | 0.400 | 40 | 2.4455 | 1.00 | 2.4455 | 0.300 | 0.7337 | 4.6 |
| 26 | 10:26 | 21.40 | 0.6 | 0.950 | 0.6 | 0.380 | 40 | 2.1988 | 1.00 | 2.1988 | 0.142 | 0.3112 | 2.0 |
| 27 | 10:10 | 21.50 | 0.6 | 1.100 | 0.6 | 0.440 | 40 | 2.1837 | 1.00 | 2.1837 | 0.110 | 0.2404 | 1.5 |
| 28 | 10:28 | 21.60 | 0.6 | 0.950 | 0.6 | 0.380 | 40 | 2.2198 | 1.00 | 2.2198 | 0.618 | 1.3708 | 8.7 |
| 29 | 10:12 | 22.80 | 0.6 | 1.000 | 0.6 | 0.400 | 40 | 0.6063 | 1.00 | 0.6063 | 1.249 | 0.7572 | 4.8 |
| 30 | 10:13 | 24.10 | 0.6 | 0.600 | 0.6 | 0.240 | 40 | 0.1407 | 1.00 | 0.1407 | 0.780 | 0.1098 | 0.7 |
| 31 | 10:14 | 25.40 | 0.6 | 0.600 | 0.6 | 0.240 | 40 | 0.2438 | 1.00 | 0.2438 | 0.780 | 0.1901 | 1.2 |
| 32 | 10:14 | 26.70 | None | 0.000 | 0.0 | 0.0 | 0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File InformationFile Name
Start Date and TimeST004.WAD
2011/09/28 09:49:05**Site Details**Site Name
Operator(s)ST004
RB



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

| File Information | | | Site Details |
|---------------------|-----------|---------------------|--|
| File Name | ST004.WAD | Start Date and Time | ST004 RB |
| 2011/09/28 09:49:05 | | | |
| St | Loc | %Dep | Message |
| 1 | 2.00 | 0.6 | High angle: 147 0.6 SNR (11.8) is different from typical SNR (28.7) 0.6 High SNR variation during measurement: 5.2,5.2 |
| 2 | 3.30 | 0.6 | High angle: -41 |
| 3 | 4.60 | 0.6 | High SNR variation during measurement: 4.7,6.0 |
| 4 | 5.90 | 0.6 | High angle: 33 0.6 SNR (18.0) is different from typical SNR (28.7) 0.6 High SNR variation during measurement: 6.0,5.6 |
| 6 | 8.50 | 0.6 | High number of spikes: 5 0.6 High angle: 23 |
| 9 | 12.40 | 0.6 | High angle: 46 |
| 10 | 13.70 | 0.6 | High angle: 72 |
| 11 | 15.00 | 0.6 | High angle: -26 |
| 12 | 15.20 | 0.6 | High angle: -38 0.6 High standard error: 0.165 |
| 13 | 15.40 | 0.6 | High angle: -25 0.6 High standard error: 0.134 |
| 14 | 16.30 | 0.6 | High angle: -38 0.6 High standard error: 0.110 |
| 20 | 20.20 | 0.6 | High number of spikes: 5 |
| 26 | 21.40 | 0.6 | High standard error: 0.124 |
| 27 | 21.50 | 0.6 | High standard error: 0.122 |
| 30 | 24.10 | 0.6 | High angle: -29 0.6 High SNR variation during measurement: 5.2,5.2 |
| 31 | 25.40 | 0.6 | High angle: -44 0.6 High SNR variation during measurement: 5.2,4.7 |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

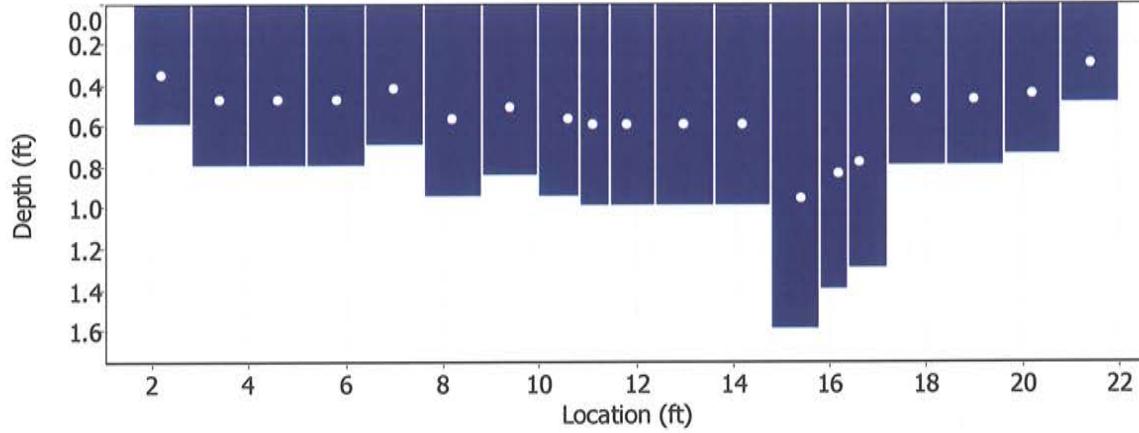
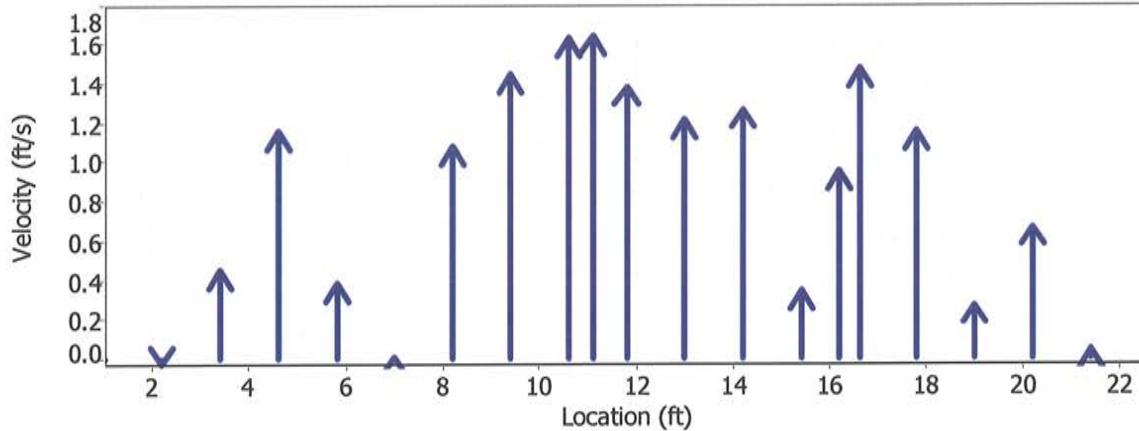
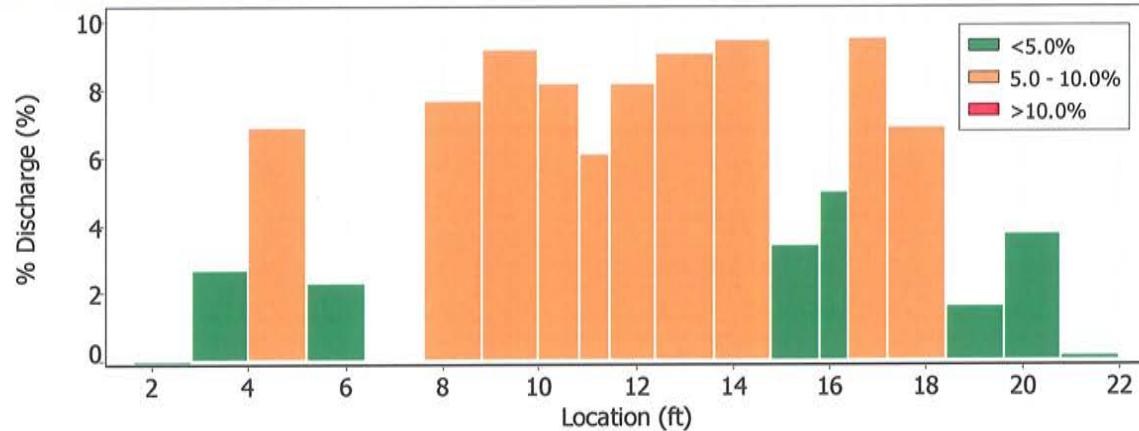
| File Information | | | | Site Details | | | | | | | | |
|----------------------------|-------------|------------------------|--------|-----------------------|------|-------|---------|----------|---------|-------|---------|------|
| System Information | | Units | | Discharge Uncertainty | | | | | | | | |
| Sensor Type | FlowTracker | Distance | ft | Category | | | | | | | | |
| Serial # | P3512 | Velocity | ft/s | ISO | | | | | | | | |
| CPU Firmware Version | 3.7 | Area | ft^2 | Stats | | | | | | | | |
| Software Ver | 2.20 | Discharge | cfs | Accuracy | | | | | | | | |
| Summary | | Units | | Depth | | | | | | | | |
| Averaging Int. | 40 | # Stations | 21 | Velocity | | | | | | | | |
| Start Edge | REW | Total Width | 21.602 | Width | | | | | | | | |
| Mean SNR | 27.1 dB | Total Area | 18.259 | Method | | | | | | | | |
| Mean Temp | 49.36 °F | Mean Depth | 0.845 | # Stations | | | | | | | | |
| Disch. Equation | Mid-Section | Mean Velocity | 0.8815 | Overall | | | | | | | | |
| | | Total Discharge | | 3.7% | | | | | | | | |
| Measurement Results | | | | | | | | | | | | |
| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
| 0 | 12:52 | 1.00 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| 1 | 12:52 | 2.20 | 0.6 | 0.600 | 0.6 | 0.240 | -0.0295 | 1.00 | -0.0295 | 0.720 | -0.0213 | -0.1 |
| 2 | 12:53 | 3.40 | 0.6 | 0.800 | 0.6 | 0.320 | 0.4508 | 1.00 | 0.4508 | 0.960 | 0.4327 | 2.7 |
| 3 | 12:55 | 4.60 | 0.6 | 0.800 | 0.6 | 0.320 | 1.1555 | 1.00 | 1.1555 | 0.960 | 1.1092 | 6.9 |
| 4 | 12:56 | 5.80 | 0.6 | 0.800 | 0.6 | 0.320 | 0.3829 | 1.00 | 0.3829 | 0.960 | 0.3675 | 2.3 |
| 5 | 12:57 | 7.00 | 0.6 | 0.700 | 0.6 | 0.280 | 0.0148 | 1.00 | 0.0148 | 0.840 | 0.0124 | 0.1 |
| 6 | 12:58 | 8.20 | 0.6 | 0.950 | 0.6 | 0.380 | 1.0787 | 1.00 | 1.0787 | 1.140 | 1.2301 | 7.6 |
| 7 | 12:59 | 9.40 | 0.6 | 0.850 | 0.6 | 0.340 | 1.4452 | 1.00 | 1.4452 | 1.020 | 1.4744 | 9.2 |
| 8 | 13:01 | 10.60 | 0.6 | 0.950 | 0.6 | 0.380 | 1.6293 | 1.00 | 1.6293 | 0.807 | 1.3152 | 8.2 |
| 9 | 13:12 | 11.10 | 0.6 | 1.000 | 0.6 | 0.400 | 1.6371 | 1.00 | 1.6371 | 0.600 | 0.9824 | 6.1 |
| 10 | 13:02 | 11.80 | 0.6 | 1.000 | 0.6 | 0.400 | 1.3845 | 1.00 | 1.3845 | 0.951 | 1.3162 | 8.2 |
| 11 | 13:03 | 13.00 | 0.6 | 1.000 | 0.6 | 0.400 | 1.2142 | 1.00 | 1.2142 | 1.200 | 1.4572 | 9.1 |
| 12 | 13:04 | 14.20 | 0.6 | 1.000 | 0.6 | 0.400 | 1.2697 | 1.00 | 1.2697 | 1.200 | 1.5238 | 9.5 |
| 13 | 13:05 | 15.40 | 0.6 | 1.600 | 0.6 | 0.640 | 0.3458 | 1.00 | 0.3458 | 1.599 | 0.5529 | 3.4 |
| 14 | 13:14 | 16.20 | 0.6 | 1.400 | 0.6 | 0.560 | 0.9531 | 1.00 | 0.9531 | 0.840 | 0.8006 | 5.0 |
| 15 | 13:06 | 16.60 | 0.6 | 1.300 | 0.6 | 0.520 | 1.4757 | 1.00 | 1.4757 | 1.041 | 1.5362 | 9.5 |
| 16 | 13:07 | 17.80 | 0.6 | 0.800 | 0.6 | 0.320 | 1.1555 | 1.00 | 1.1555 | 0.960 | 1.1092 | 6.9 |
| 17 | 13:08 | 19.00 | 0.6 | 0.800 | 0.6 | 0.320 | 0.2759 | 1.00 | 0.2759 | 0.960 | 0.2649 | 1.6 |
| 18 | 13:09 | 20.20 | 0.6 | 0.750 | 0.6 | 0.300 | 0.6709 | 1.00 | 0.6709 | 0.900 | 0.6039 | 3.8 |
| 19 | 13:10 | 21.40 | 0.6 | 0.500 | 0.6 | 0.200 | 0.0466 | 1.00 | 0.0466 | 0.600 | 0.0280 | 0.2 |
| 20 | 13:10 | 22.60 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File InformationFile Name
Start Date and TimeST008.WAD
2011/09/28 12:52:47**Site Details**Site Name
Operator(s)ST008
RB



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

| File Information | | | Site Details |
|------------------------|-----------|-----------|---|
| File Name | ST008.WAD | Site Name | ST008 |
| Quality Control | | | |
| St | Loc | %Dep | Message |
| 1 | 2.20 | 0.6 | High angle: 105 |
| | | 0.6 | High SNR variation during measurement: 5.2,5.2 |
| 3 | 4.60 | 0.6 | High standard error: 0.089 |
| 4 | 5.80 | 0.6 | High angle: -30 |
| 6 | 8.20 | 0.6 | High standard error: 0.109 |
| 7 | 9.40 | 0.6 | High standard error: 0.098 |
| 9 | 11.10 | 0.6 | High standard error: 0.100 |
| 19 | 21.40 | 0.6 | SNR (15.5) is different from typical SNR (27.1) |
| | | 0.6 | High SNR variation during measurement: 7.7,5.6 |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

| File Information | | Site Details | |
|------------------------------|---------------------|------------------------|-----------------|
| File Name | ST010.WAD | Site Name | ST010 |
| Start Date and Time | 2011/09/28 14:21:01 | Operator(s) | DW |
| System Information | | | |
| Sensor Type | FlowTracker | Units | (English Units) |
| Serial # | P3533 | Distance | ft |
| CPU Firmware Version | 3.7 | Velocity | ft/s |
| Software Ver | 2.20 | Area | ft^2 |
| | | Discharge | cfs |
| Summary | | | |
| Averaging Int. | 40 | # Stations | 25 |
| Start Edge | REW | Total Width | 22.000 |
| Mean SNR | 32.0 dB | Total Area | 18.280 |
| Mean Temp | 48.44 °F | Mean Depth | 0.831 |
| Disch. Equation | Mid-Section | Mean Velocity | 0.8087 |
| | | Total Discharge | 14.7830 |
| Discharge Uncertainty | | | |
| Category | ISO | Stats | |
| Accuracy | 1.0% | 1.0% | |
| Depth | 0.2% | 3.1% | |
| Velocity | 1.4% | 8.2% | |
| Width | 0.1% | 0.1% | |
| Method | 1.9% | - | |
| # Stations | 2.0% | - | |
| Overall | 3.3% | 8.8% | |

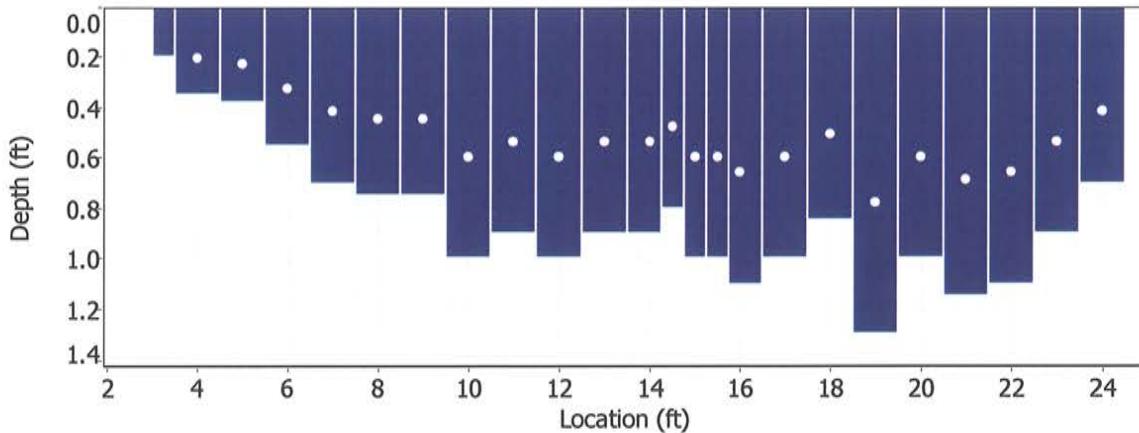
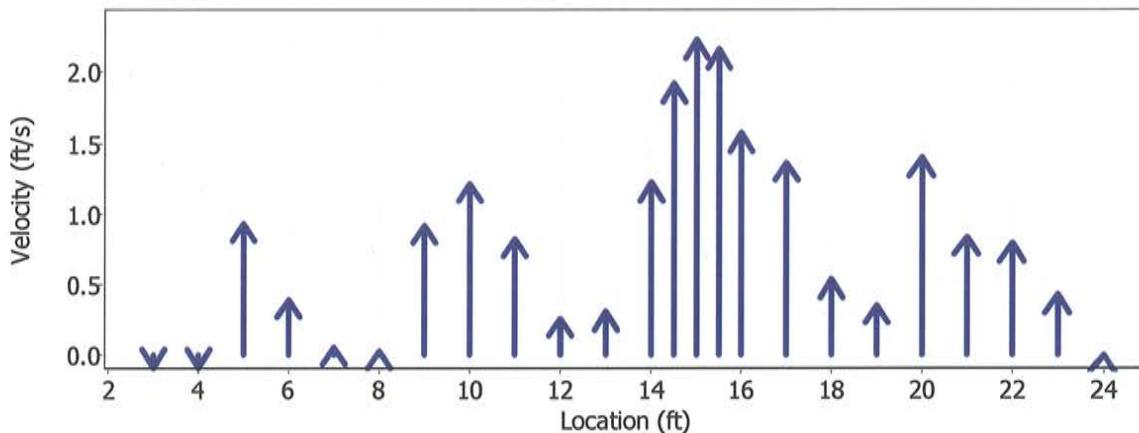
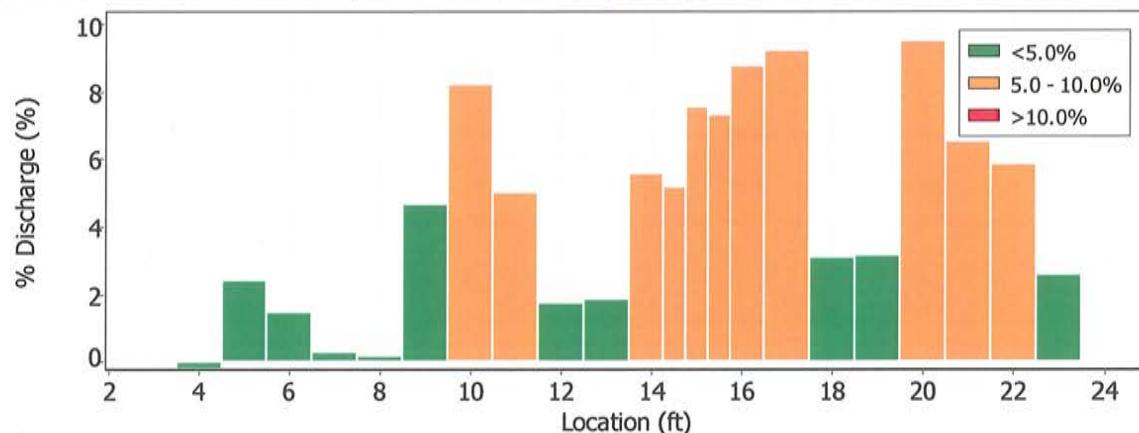
| Measurement Results | | | | | | | | | | | | |
|---------------------|--------------|--------------|------------|--------------|------------|--------------|----------------|-------------|----------------|--------------|----------------|-------------|
| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
| 0 | 14:21 | 3.00 | None | 0.200 | 0.0 | 0.0 | 0.0000 | 1.00 | -0.0896 | 0.100 | -0.0090 | -0.1 |
| 1 | <i>14:21</i> | <i>4.00</i> | <i>0.6</i> | <i>0.350</i> | <i>0.6</i> | <i>0.140</i> | <i>-0.0896</i> | <i>1.00</i> | <i>-0.0896</i> | <i>0.350</i> | <i>-0.0314</i> | <i>-0.2</i> |
| 2 | 14:22 | 5.00 | 0.6 | 0.380 | 0.6 | 0.152 | 0.9354 | 1.00 | 0.9354 | 0.380 | 0.3554 | 2.4 |
| 3 | 14:24 | 6.00 | 0.6 | 0.550 | 0.6 | 0.220 | 0.3934 | 1.00 | 0.3934 | 0.550 | 0.2163 | 1.5 |
| 4 | <i>14:28</i> | <i>7.00</i> | <i>0.6</i> | <i>0.700</i> | <i>0.6</i> | <i>0.280</i> | <i>0.0627</i> | <i>1.00</i> | <i>0.0627</i> | <i>0.700</i> | <i>0.0439</i> | <i>0.3</i> |
| 5 | <i>14:30</i> | <i>8.00</i> | <i>0.6</i> | <i>0.750</i> | <i>0.6</i> | <i>0.300</i> | <i>0.0318</i> | <i>1.00</i> | <i>0.0318</i> | <i>0.750</i> | <i>0.0239</i> | <i>0.2</i> |
| 6 | 14:31 | 9.00 | 0.6 | 0.750 | 0.6 | 0.300 | 0.9222 | 1.00 | 0.9222 | 0.750 | 0.6917 | 4.7 |
| 7 | 14:32 | 10.00 | 0.6 | 1.000 | 0.6 | 0.400 | 1.2146 | 1.00 | 1.2146 | 1.000 | 1.2146 | 8.2 |
| 8 | <i>14:34</i> | <i>11.00</i> | <i>0.6</i> | <i>0.900</i> | <i>0.6</i> | <i>0.360</i> | <i>0.8245</i> | <i>1.00</i> | <i>0.8245</i> | <i>0.900</i> | <i>0.7420</i> | <i>5.0</i> |
| 9 | 14:36 | 12.00 | 0.6 | 1.000 | 0.6 | 0.400 | 0.2625 | 1.00 | 0.2625 | 1.000 | 0.2625 | 1.8 |
| 10 | 14:39 | 13.00 | 0.6 | 0.900 | 0.6 | 0.360 | 0.3058 | 1.00 | 0.3058 | 0.900 | 0.2752 | 1.9 |
| 11 | <i>14:41</i> | <i>14.00</i> | <i>0.6</i> | <i>0.900</i> | <i>0.6</i> | <i>0.360</i> | <i>1.2218</i> | <i>1.00</i> | <i>1.2218</i> | <i>0.675</i> | <i>0.8246</i> | <i>5.6</i> |
| 12 | <i>15:04</i> | <i>14.50</i> | <i>0.6</i> | <i>0.800</i> | <i>0.6</i> | <i>0.320</i> | <i>1.9196</i> | <i>1.00</i> | <i>1.9196</i> | <i>0.400</i> | <i>0.7677</i> | <i>5.2</i> |
| 13 | 14:42 | 15.00 | 0.6 | 1.000 | 0.6 | 0.400 | 2.2323 | 1.00 | 2.2323 | 0.500 | 1.1161 | 7.6 |
| 14 | 15:01 | 15.50 | 0.6 | 1.000 | 0.6 | 0.400 | 2.1657 | 1.00 | 2.1657 | 0.500 | 1.0828 | 7.3 |
| 15 | 14:43 | 16.00 | 0.6 | 1.100 | 0.6 | 0.440 | 1.5692 | 1.00 | 1.5692 | 0.825 | 1.2947 | 8.8 |
| 16 | 14:44 | 17.00 | 0.6 | 1.000 | 0.6 | 0.400 | 1.3619 | 1.00 | 1.3619 | 1.000 | 1.3619 | 9.2 |
| 17 | 14:46 | 18.00 | 0.6 | 0.850 | 0.6 | 0.340 | 0.5374 | 1.00 | 0.5374 | 0.850 | 0.4568 | 3.1 |
| 18 | <i>14:52</i> | <i>19.00</i> | <i>0.6</i> | <i>1.300</i> | <i>0.6</i> | <i>0.520</i> | <i>0.3583</i> | <i>1.00</i> | <i>0.3583</i> | <i>1.300</i> | <i>0.4657</i> | <i>3.2</i> |
| 19 | 14:53 | 20.00 | 0.6 | 1.000 | 0.6 | 0.400 | 1.3999 | 1.00 | 1.3999 | 1.000 | 1.3999 | 9.5 |
| 20 | <i>14:55</i> | <i>21.00</i> | <i>0.6</i> | <i>1.150</i> | <i>0.6</i> | <i>0.460</i> | <i>0.8419</i> | <i>1.00</i> | <i>0.8419</i> | <i>1.150</i> | <i>0.9681</i> | <i>6.5</i> |
| 21 | 14:56 | 22.00 | 0.6 | 1.100 | 0.6 | 0.440 | 0.7887 | 1.00 | 0.7887 | 1.100 | 0.8676 | 5.9 |
| 22 | 14:58 | 23.00 | 0.6 | 0.900 | 0.6 | 0.360 | 0.4291 | 1.00 | 0.4291 | 0.900 | 0.3862 | 2.6 |
| 23 | 14:59 | 24.00 | 0.6 | 0.700 | 0.6 | 0.280 | 0.0082 | 1.00 | 0.0082 | 0.700 | 0.0057 | 0.0 |
| 24 | 14:59 | 25.00 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File InformationFile Name
Start Date and TimeST010.WAD
2011/09/28 14:21:01**Site Details**Site Name
Operator(s)ST010
DW



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

| File Information | | | Site Details |
|---------------------|---------------------|-------------|---|
| File Name | ST010.WAD | Site Name | ST010 |
| Start Date and Time | | | |
| | 2011/09/28 14:21:01 | Operator(s) | DW |
| Quality Control | | | |
| St | Loc | %Dep | Message |
| 1 | 4.00 | 0.6 | High angle: 145 |
| 4 | 7.00 | 0.6 | High angle: 52 |
| 5 | 8.00 | 0.6 | High angle: 59 |
| | | 0.6 | High SNR variation during measurement: 5.2,5.2 |
| 8 | 11.00 | 0.6 | High standard error: 0.088 |
| 11 | 14.00 | 0.6 | High angle: -20 |
| 12 | 14.50 | 0.6 | High SNR variation during measurement: 13.3,1.3 |
| 18 | 19.00 | 0.6 | High angle: 33 |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

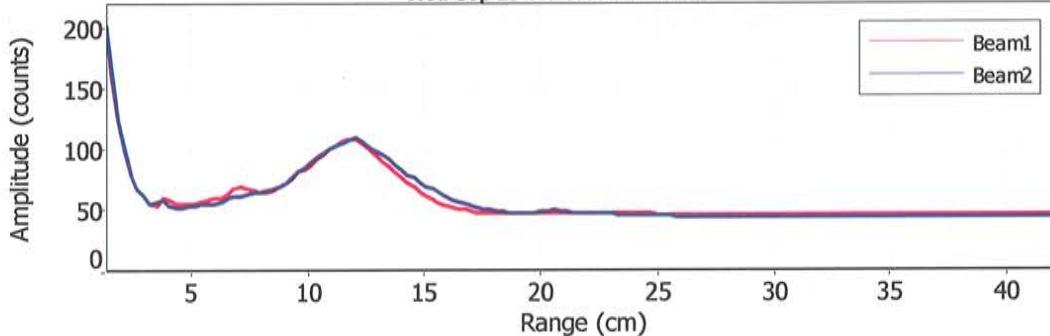
File Name ST010.WAD
Start Date and Time 2011/09/28 14:21:01

Site Details

Site Name ST010
Operator(s) DW

Automatic Quality Control Test (BeamCheck)

Wed Sep 28 14:19:41 MDT 2011



- Noise level check - Pass
- SNR check - Pass
- Peak location check - Pass
- Peak shape check - Pass



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

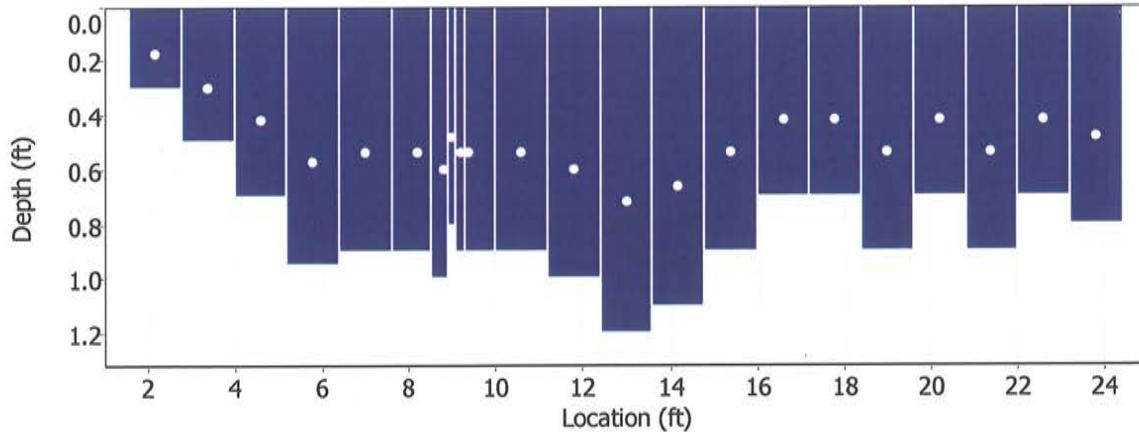
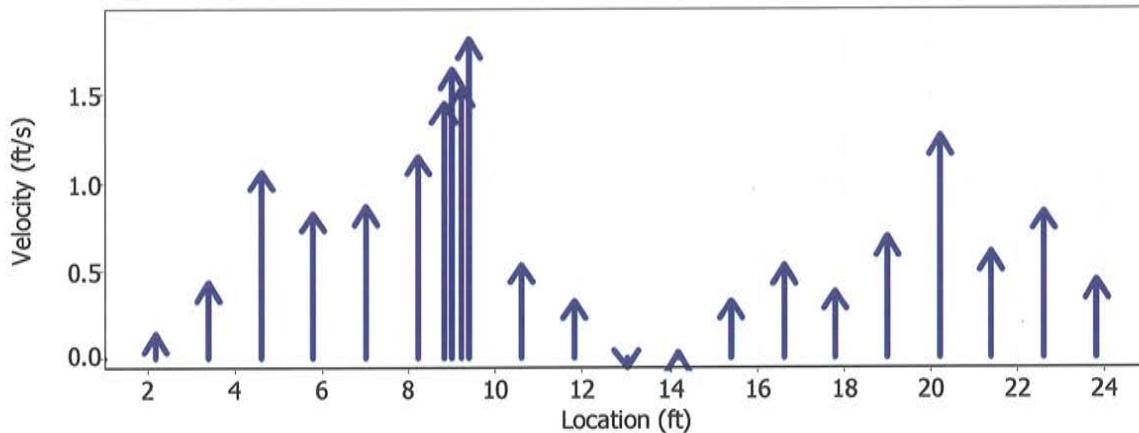
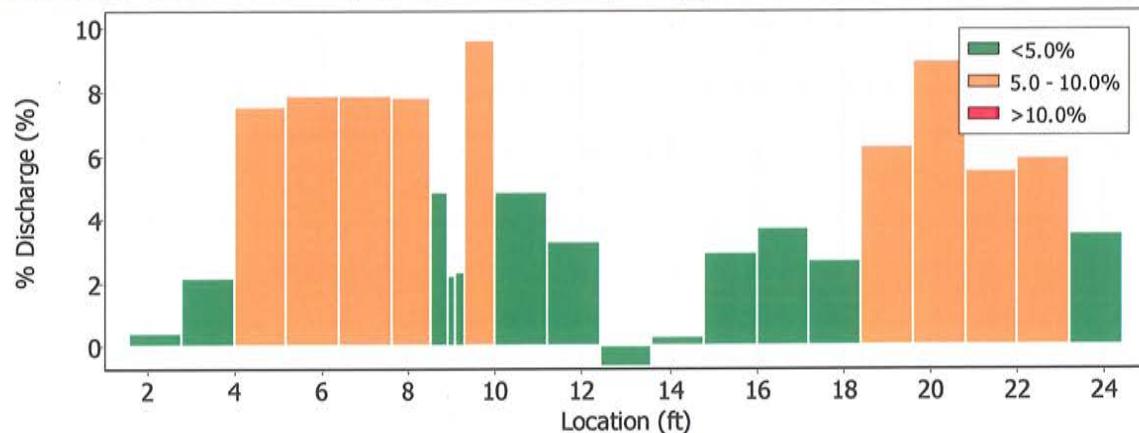
| File Information | | | | Site Details | | | | | | | | |
|----------------------|---------------------|-----------------|----------------|-----------------------|------------|--------------|----------------|-----------------------|----------------|--------------|----------------|-------------|
| File Name | ST010A.WAD | | | Site Name | ST010A | | | | | | | |
| Start Date and Time | 2011/09/28 15:00:02 | | | Operator(s) | RB | | | | | | | |
| System Information | | | | Units (English Units) | | | | Discharge Uncertainty | | | | |
| Sensor Type | FlowTracker | Distance | ft | Accuracy | 1.0% | 1.0% | | Category | ISO | Stats | | |
| Serial # | P3512 | Velocity | ft/s | Depth | 0.4% | 2.9% | | | | | | |
| CPU Firmware Version | 3.7 | Area | ft^2 | Velocity | 1.5% | 8.5% | | | | | | |
| Software Ver | 2.20 | Discharge | cfs | Width | 0.1% | 0.1% | | | | | | |
| Summary | | | | | | | | | | | | |
| Averaging Int. | 40 | # Stations | 24 | Method | 1.9% | - | | Overall | 3.4% | 9.1% | | |
| Start Edge | REW | Total Width | 24.003 | | | | | | | | | |
| Mean SNR | 28.7 dB | Total Area | 18.802 | | | | | | | | | |
| Mean Temp | 50.80 °F | Mean Depth | 0.783 | | | | | | | | | |
| Disch. Equation | Mid-Section | Mean Velocity | 0.6326 | | | | | | | | | |
| | | Total Discharge | 11.8943 | | | | | | | | | |
| Measurement Results | | | | | | | | | | | | |
| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
| 0 | 15:00 | 1.00 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| 1 | <i>15:00</i> | <i>2.20</i> | <i>0.6</i> | <i>0.300</i> | <i>0.6</i> | <i>0.120</i> | <i>0.1394</i> | <i>1.00</i> | <i>0.1394</i> | <i>0.360</i> | <i>0.0502</i> | <i>0.4</i> |
| 2 | <i>15:02</i> | <i>3.40</i> | <i>0.6</i> | <i>0.500</i> | <i>0.6</i> | <i>0.200</i> | <i>0.4301</i> | <i>1.00</i> | <i>0.4301</i> | <i>0.600</i> | <i>0.2581</i> | <i>2.2</i> |
| 3 | 15:03 | 4.60 | 0.6 | 0.700 | 0.6 | 0.280 | 1.0627 | 1.00 | 1.0627 | 0.840 | 0.8929 | 7.5 |
| 4 | 15:04 | 5.80 | 0.6 | 0.950 | 0.6 | 0.380 | 0.8228 | 1.00 | 0.8228 | 1.140 | 0.9383 | 7.9 |
| 5 | 15:05 | 7.00 | 0.6 | 0.900 | 0.6 | 0.360 | 0.8658 | 1.00 | 0.8658 | 1.080 | 0.9351 | 7.9 |
| 6 | 15:06 | 8.20 | 0.6 | 0.900 | 0.6 | 0.360 | 1.1473 | 1.00 | 1.1473 | 0.810 | 0.9288 | 7.8 |
| 7 | <i>15:21</i> | <i>8.80</i> | <i>0.6</i> | <i>1.000</i> | <i>0.6</i> | <i>0.400</i> | <i>1.4485</i> | <i>1.00</i> | <i>1.4485</i> | <i>0.400</i> | <i>0.5788</i> | <i>4.9</i> |
| 8 | <i>15:25</i> | <i>9.00</i> | <i>0.6</i> | <i>0.800</i> | <i>0.6</i> | <i>0.320</i> | <i>1.6421</i> | <i>1.00</i> | <i>1.6421</i> | <i>0.160</i> | <i>0.2629</i> | <i>2.2</i> |
| 9 | 15:26 | 9.20 | 0.6 | 0.900 | 0.6 | 0.360 | 1.5404 | 1.00 | 1.5404 | 0.180 | 0.2779 | 2.3 |
| 10 | <i>15:07</i> | <i>9.40</i> | <i>0.6</i> | <i>0.900</i> | <i>0.6</i> | <i>0.360</i> | <i>1.8150</i> | <i>1.00</i> | <i>1.8150</i> | <i>0.630</i> | <i>1.1441</i> | <i>9.6</i> |
| 11 | 15:08 | 10.60 | 0.6 | 0.900 | 0.6 | 0.360 | 0.5308 | 1.00 | 0.5308 | 1.080 | 0.5733 | 4.8 |
| 12 | 15:10 | 11.80 | 0.6 | 1.000 | 0.6 | 0.400 | 0.3281 | 1.00 | 0.3281 | 1.200 | 0.3937 | 3.3 |
| 13 | <i>15:11</i> | <i>13.00</i> | <i>0.6</i> | <i>1.200</i> | <i>0.6</i> | <i>0.480</i> | <i>-0.0538</i> | <i>1.00</i> | <i>-0.0538</i> | <i>1.440</i> | <i>-0.0775</i> | <i>-0.7</i> |
| 14 | 15:12 | 14.20 | 0.6 | 1.100 | 0.6 | 0.440 | 0.0308 | 1.00 | 0.0308 | 1.320 | 0.0407 | 0.3 |
| 15 | <i>15:13</i> | <i>15.40</i> | <i>0.6</i> | <i>0.900</i> | <i>0.6</i> | <i>0.360</i> | <i>0.3258</i> | <i>1.00</i> | <i>0.3258</i> | <i>1.080</i> | <i>0.3519</i> | <i>3.0</i> |
| 16 | <i>15:14</i> | <i>16.60</i> | <i>0.6</i> | <i>0.700</i> | <i>0.6</i> | <i>0.280</i> | <i>0.5253</i> | <i>1.00</i> | <i>0.5253</i> | <i>0.840</i> | <i>0.4414</i> | <i>3.7</i> |
| 17 | 15:15 | 17.80 | 0.6 | 0.700 | 0.6 | 0.280 | 0.3802 | 1.00 | 0.3802 | 0.840 | 0.3195 | 2.7 |
| 18 | <i>15:16</i> | <i>19.00</i> | <i>0.6</i> | <i>0.900</i> | <i>0.6</i> | <i>0.360</i> | <i>0.6909</i> | <i>1.00</i> | <i>0.6909</i> | <i>1.080</i> | <i>0.7462</i> | <i>6.3</i> |
| 19 | 15:17 | 20.20 | 0.6 | 0.700 | 0.6 | 0.280 | 1.2657 | 1.00 | 1.2657 | 0.840 | 1.0635 | 8.9 |
| 20 | 15:18 | 21.40 | 0.6 | 0.900 | 0.6 | 0.360 | 0.6024 | 1.00 | 0.6024 | 1.080 | 0.6506 | 5.5 |
| 21 | <i>15:19</i> | <i>22.60</i> | <i>0.6</i> | <i>0.700</i> | <i>0.6</i> | <i>0.280</i> | <i>0.8356</i> | <i>1.00</i> | <i>0.8356</i> | <i>0.840</i> | <i>0.7021</i> | <i>5.9</i> |
| 22 | 15:23 | 23.80 | 0.6 | 0.800 | 0.6 | 0.320 | 0.4393 | 1.00 | 0.4393 | 0.960 | 0.4217 | 3.5 |
| 23 | 15:23 | 25.00 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File InformationFile Name
Start Date and TimeST010A.WAD
2011/09/28 15:00:02**Site Details**Site Name
Operator(s)ST010A
RB



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

File Name ST010A.WAD
Start Date and Time 2011/09/28 15:00:02

Site Details

Site Name ST010A
Operator(s) RB

Quality Control

| St | Loc | %Dep | Message |
|----|-------|------|--|
| 1 | 2.20 | 0.6 | High angle: -51 |
| | | 0.6 | High SNR variation during measurement: 5.6,5.2 |
| 2 | 3.40 | 0.6 | High angle: -29 |
| 7 | 8.80 | 0.6 | High standard error: 0.090 |
| 8 | 9.00 | 0.6 | High standard error: 0.083 |
| 10 | 9.40 | 0.6 | High standard error: 0.098 |
| 13 | 13.00 | 0.6 | High angle: -132 |
| | | 0.6 | High SNR variation during measurement: 5.6,5.2 |
| 14 | 14.20 | 0.6 | High angle: 21 |
| | | 0.6 | High SNR variation during measurement: 6.0,6.9 |
| 15 | 15.40 | 0.6 | High angle: -27 |
| 16 | 16.60 | 0.6 | High angle: -24 |
| 18 | 19.00 | 0.6 | High angle: -37 |
| 21 | 22.60 | 0.6 | High angle: -29 |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

| File Information | | | | Site Details | | | | | | | | |
|----------------------------|-------------|------------------------|--------|-----------------------|------|-------|---------|----------|---------|-------|---------|-----|
| System Information | | Units | | Discharge Uncertainty | | | | | | | | |
| Sensor Type | FlowTracker | Distance | ft | Category | | | | | | | | |
| Serial # | P3533 | Velocity | ft/s | ISO | | | | | | | | |
| CPU Firmware Version | 3.7 | Area | ft^2 | Stats | | | | | | | | |
| Software Ver | 2.20 | Discharge | cfs | Accuracy | | | | | | | | |
| Summary | | Units | | Depth | | | | | | | | |
| Averaging Int. | 40 | # Stations | 25 | Velocity | | | | | | | | |
| Start Edge | REW | Total Width | 22.000 | Width | | | | | | | | |
| Mean SNR | 30.2 dB | Total Area | 19.333 | Method | | | | | | | | |
| Mean Temp | 46.74 °F | Mean Depth | 0.879 | # Stations | | | | | | | | |
| Disch. Equation | Mid-Section | Mean Velocity | 0.8794 | Overall | | | | | | | | |
| | | Total Discharge | | 3.1% | | | | | | | | |
| Measurement Results | | | | | | | | | | | | |
| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
| 0 | 11:03 | 6.00 | None | 0.200 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.2579 | 0.100 | 0.0258 | 0.2 |
| 1 | 11:05 | 7.00 | 0.6 | 0.620 | 0.6 | 0.248 | 0.2579 | 1.00 | 0.2579 | 0.620 | 0.1599 | 0.9 |
| 2 | 11:07 | 8.00 | 0.6 | 0.550 | 0.6 | 0.220 | 0.2808 | 1.00 | 0.2808 | 0.550 | 0.1544 | 0.9 |
| 3 | 11:08 | 9.00 | 0.6 | 0.600 | 0.6 | 0.240 | 0.4514 | 1.00 | 0.4514 | 0.600 | 0.2709 | 1.6 |
| 4 | 11:10 | 10.00 | 0.6 | 0.850 | 0.6 | 0.340 | 0.7595 | 1.00 | 0.7595 | 0.638 | 0.4842 | 2.8 |
| 5 | 11:12 | 10.50 | 0.6 | 1.000 | 0.6 | 0.400 | 0.6220 | 1.00 | 0.6220 | 0.500 | 0.3110 | 1.8 |
| 6 | 11:15 | 11.00 | 0.6 | 1.000 | 0.6 | 0.400 | 0.5302 | 1.00 | 0.5302 | 0.750 | 0.3976 | 2.3 |
| 7 | 11:18 | 12.00 | 0.6 | 1.150 | 0.6 | 0.460 | 0.8255 | 1.00 | 0.8255 | 1.150 | 0.9492 | 5.6 |
| 8 | 11:21 | 13.00 | 0.6 | 1.200 | 0.6 | 0.480 | 0.8179 | 1.00 | 0.8179 | 1.200 | 0.9816 | 5.8 |
| 9 | 11:22 | 14.00 | 0.6 | 1.200 | 0.6 | 0.480 | 1.5236 | 1.00 | 1.5236 | 0.900 | 1.3714 | 8.1 |
| 10 | 11:47 | 14.50 | 0.6 | 1.150 | 0.6 | 0.460 | 1.4222 | 1.00 | 1.4222 | 0.575 | 0.8177 | 4.8 |
| 11 | 11:24 | 15.00 | 0.6 | 1.200 | 0.6 | 0.480 | 1.7375 | 1.00 | 1.7375 | 0.900 | 1.5640 | 9.2 |
| 12 | 11:25 | 16.00 | 0.6 | 1.000 | 0.6 | 0.400 | 1.0246 | 1.00 | 1.0246 | 1.000 | 1.0246 | 6.0 |
| 13 | 11:26 | 17.00 | 0.6 | 1.000 | 0.6 | 0.400 | 0.8114 | 1.00 | 0.8114 | 1.000 | 0.8114 | 4.8 |
| 14 | 11:27 | 18.00 | 0.6 | 1.000 | 0.6 | 0.400 | 1.0010 | 1.00 | 1.0010 | 1.000 | 1.0010 | 5.9 |
| 15 | 11:28 | 19.00 | 0.6 | 1.000 | 0.6 | 0.400 | 0.4423 | 1.00 | 0.4423 | 1.000 | 0.4423 | 2.6 |
| 16 | 11:32 | 20.00 | 0.6 | 1.050 | 0.6 | 0.420 | 1.2700 | 1.00 | 1.2700 | 1.050 | 1.3333 | 7.8 |
| 17 | 11:34 | 21.00 | 0.6 | 1.100 | 0.6 | 0.440 | 1.2700 | 1.00 | 1.2700 | 1.100 | 1.3971 | 8.2 |
| 18 | 11:36 | 22.00 | 0.6 | 1.200 | 0.6 | 0.480 | 1.2713 | 1.00 | 1.2713 | 1.200 | 1.5258 | 9.0 |
| 19 | 11:38 | 23.00 | 0.6 | 0.900 | 0.6 | 0.360 | 0.9203 | 1.00 | 0.9203 | 0.900 | 0.8282 | 4.9 |
| 20 | 11:40 | 24.00 | 0.6 | 0.900 | 0.6 | 0.360 | 0.6581 | 1.00 | 0.6581 | 0.900 | 0.5923 | 3.5 |
| 21 | 11:41 | 25.00 | 0.6 | 0.700 | 0.6 | 0.280 | 0.6115 | 1.00 | 0.6115 | 0.700 | 0.4282 | 2.5 |
| 22 | 11:42 | 26.00 | 0.6 | 0.700 | 0.6 | 0.280 | 0.1877 | 1.00 | 0.1877 | 0.700 | 0.1314 | 0.8 |
| 23 | 11:43 | 27.00 | 0.6 | 0.300 | 0.6 | 0.120 | -0.0089 | 1.00 | -0.0089 | 0.300 | -0.0027 | 0.0 |
| 24 | 11:43 | 28.00 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |

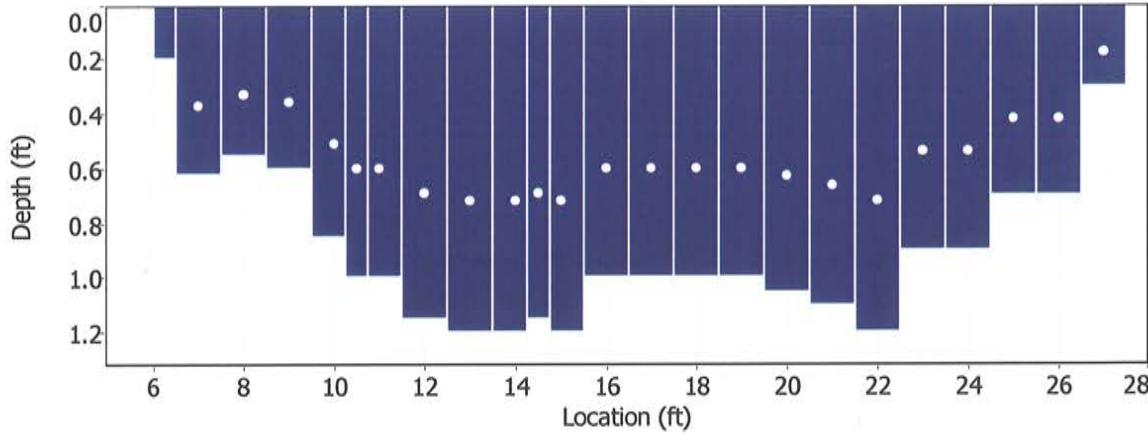
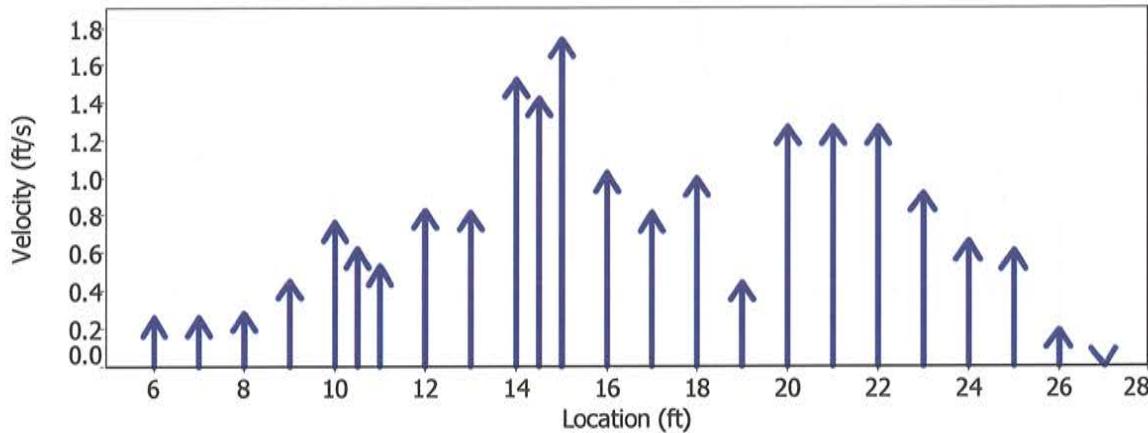
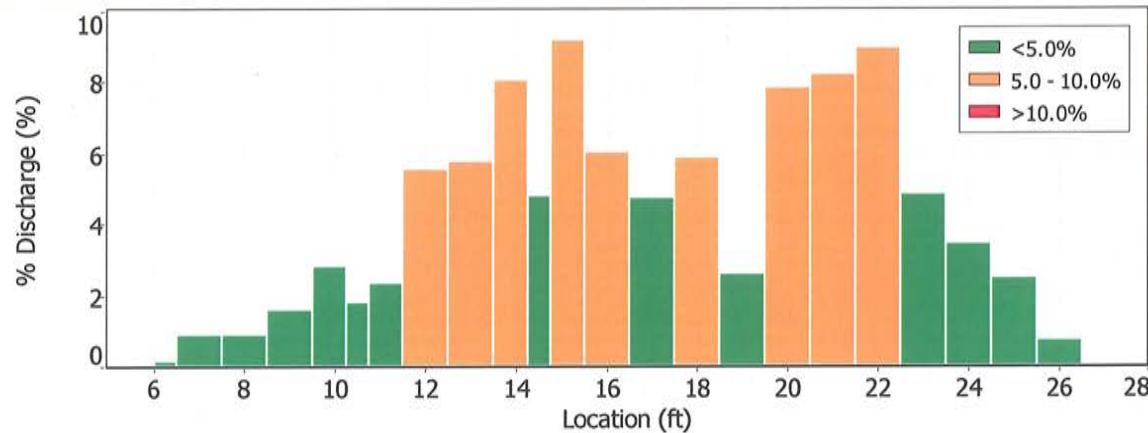
Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

| File Information | | Site Details | |
|---------------------|---------------------|--------------|-------|
| File Name | ST014.WAD | Site Name | ST014 |
| Start Date and Time | 2011/09/28 11:03:35 | Operator(s) | DW |





Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

File Name ST014.WAD
Start Date and Time 2011/09/28 11:03:35

Site Details

Site Name ST014
Operator(s) DW

Quality Control

| St | Loc | %Dep | Message |
|----|------|------|--|
| 1 | 7.00 | 0.6 | High SNR variation during measurement: 6.5,5.6 |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

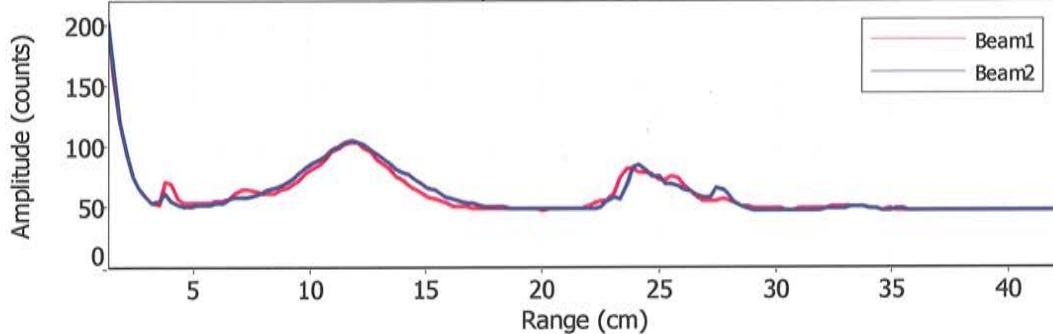
File Name ST014.WAD
Start Date and Time 2011/09/28 11:03:35

Site Details

Site Name ST014
Operator(s) DW

Automatic Quality Control Test (BeamCheck)

Wed Sep 28 11:01:30 MDT 2011



- Noise level check - Pass
- SNR check - Pass
- Peak location check - Pass
- Peak shape check - Pass



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

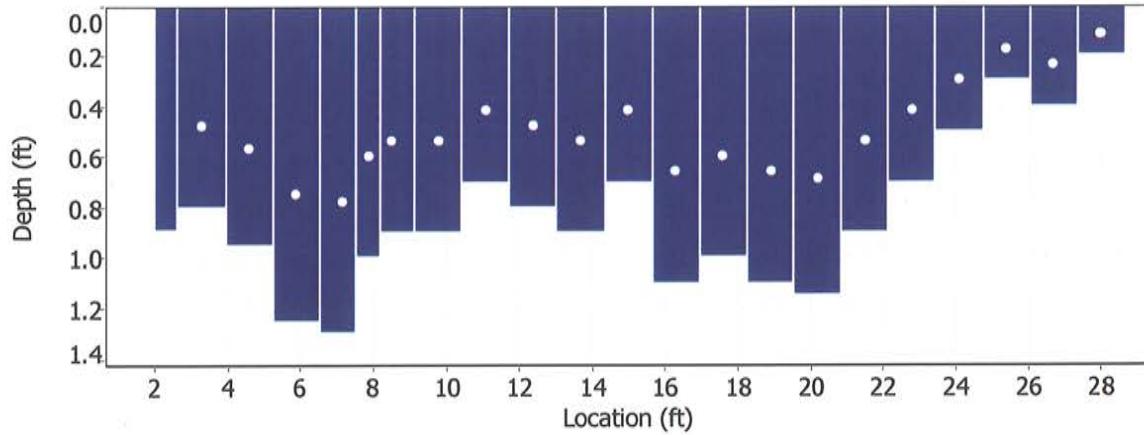
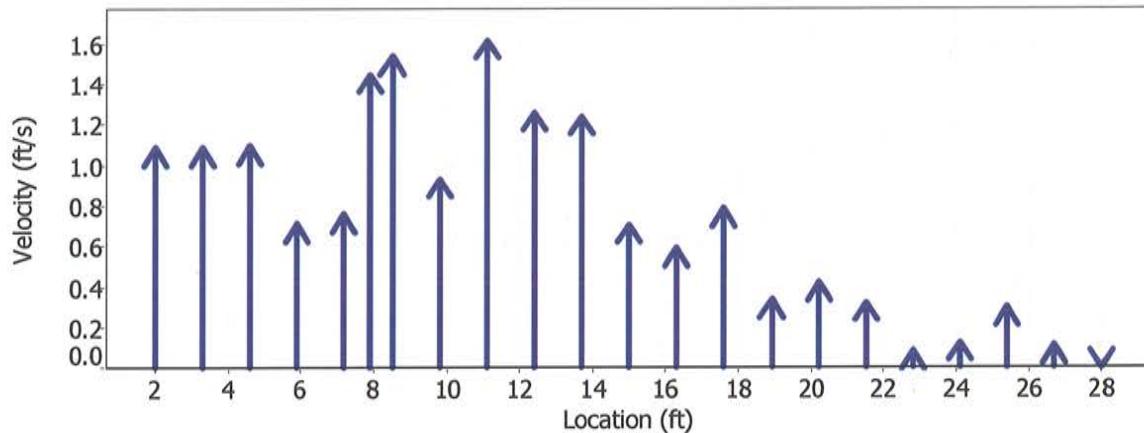
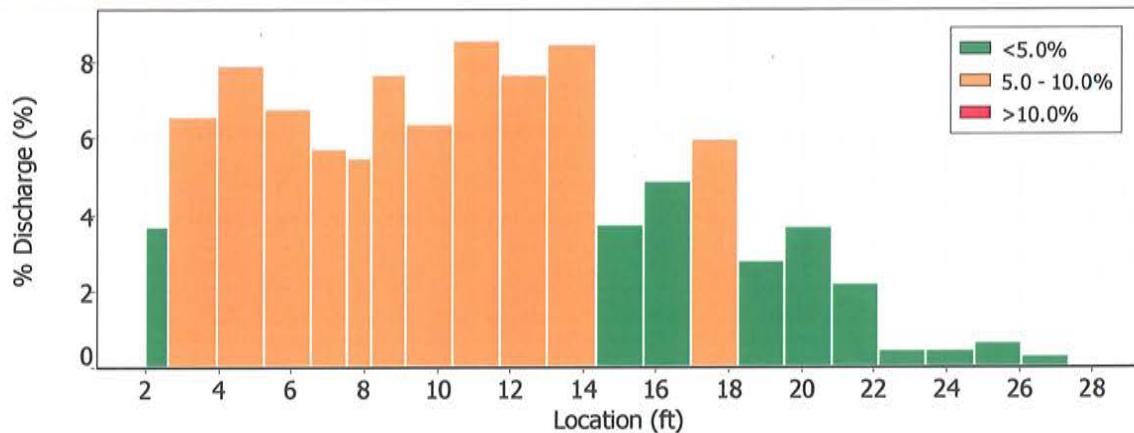
| File Information | | | | Site Details | | | | | | | | |
|---------------------|---------------------|-----------------|----------------|--------------|------------|-----------------------|----------------|----------------------|----------------|--------------|----------------|------------|
| File Name | ST016A.WAD | | | Site Name | ST016A | | | | | | | |
| Start Date and Time | 2011/09/28 12:50:09 | | | Operator(s) | DW | | | | | | | |
| System Information | | | | | | Units (English Units) | | | | | | |
| Sensor Type | FlowTracker | Distance | ft | Serial # | P3533 | Velocity | ft/s | CPU Firmware Version | 3.7 | Area | ft^2 | |
| Software Ver | 2.20 | Discharge | cfs | | | | | | | | | |
| Summary | | | | | | Discharge Uncertainty | | | | | | |
| Averaging Int. | 40 | # Stations | 23 | Start Edge | REW | Total Width | 27.297 | Category | ISO | Stats | | |
| Mean SNR | 32.0 dB | Total Area | 22.036 | Mean Temp | 49.62 °F | Mean Depth | 0.807 | Accuracy | 1.0% | 1.0% | | |
| Disch. Equation | Mid-Section | Mean Velocity | 0.7814 | | | | | Depth | 0.3% | 3.2% | | |
| | | Total Discharge | 17.2194 | | | | | Velocity | 1.6% | 6.6% | | |
| | | | | | | | | Width | 0.1% | 0.1% | | |
| | | | | | | | | Method | 1.9% | - | | |
| | | | | | | | | # Stations | 2.2% | - | | |
| | | | | | | | | Overall | 3.5% | 7.4% | | |
| Measurement Results | | | | | | | | | | | | |
| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
| 0 | 12:50 | 2.00 | None | 0.890 | 0.0 | 0.0 | 0.0000 | 1.00 | 1.0909 | 0.579 | 0.6311 | 3.7 |
| 1 | 12:52 | 3.30 | 0.6 | 0.800 | 0.6 | 0.320 | 1.0909 | 1.00 | 1.0909 | 1.040 | 1.1342 | 6.6 |
| 2 | <i>12:57</i> | <i>4.60</i> | <i>0.6</i> | <i>0.950</i> | <i>0.6</i> | <i>0.380</i> | <i>1.0988</i> | <i>1.00</i> | <i>1.0988</i> | <i>1.235</i> | <i>1.3570</i> | <i>7.9</i> |
| 3 | 12:58 | 5.90 | 0.6 | 1.250 | 0.6 | 0.500 | 0.7149 | 1.00 | 0.7149 | 1.625 | 1.1616 | 6.7 |
| 4 | <i>12:59</i> | <i>7.20</i> | <i>0.6</i> | <i>1.300</i> | <i>0.6</i> | <i>0.520</i> | <i>0.7595</i> | <i>1.00</i> | <i>0.7595</i> | <i>1.300</i> | <i>0.9874</i> | <i>5.7</i> |
| 5 | <i>13:35</i> | <i>7.90</i> | <i>0.6</i> | <i>1.000</i> | <i>0.6</i> | <i>0.400</i> | <i>1.4478</i> | <i>1.00</i> | <i>1.4478</i> | <i>0.650</i> | <i>0.9410</i> | <i>5.5</i> |
| 6 | <i>13:02</i> | <i>8.50</i> | <i>0.6</i> | <i>0.900</i> | <i>0.6</i> | <i>0.360</i> | <i>1.5413</i> | <i>1.00</i> | <i>1.5413</i> | <i>0.855</i> | <i>1.3172</i> | <i>7.6</i> |
| 7 | 13:06 | 9.80 | 0.6 | 0.900 | 0.6 | 0.360 | 0.9364 | 1.00 | 0.9364 | 1.170 | 1.0953 | 6.4 |
| 8 | <i>13:09</i> | <i>11.10</i> | <i>0.6</i> | <i>0.700</i> | <i>0.6</i> | <i>0.280</i> | <i>1.6188</i> | <i>1.00</i> | <i>1.6188</i> | <i>0.910</i> | <i>1.4732</i> | <i>8.6</i> |
| 9 | 13:11 | 12.40 | 0.6 | 0.800 | 0.6 | 0.320 | 1.2648 | 1.00 | 1.2648 | 1.040 | 1.3150 | 7.6 |
| 10 | 13:12 | 13.70 | 0.6 | 0.900 | 0.6 | 0.360 | 1.2448 | 1.00 | 1.2448 | 1.170 | 1.4561 | 8.5 |
| 11 | 13:13 | 15.00 | 0.6 | 0.700 | 0.6 | 0.280 | 0.7087 | 1.00 | 0.7087 | 0.910 | 0.6449 | 3.7 |
| 12 | 13:15 | 16.30 | 0.6 | 1.100 | 0.6 | 0.440 | 0.5902 | 1.00 | 0.5902 | 1.430 | 0.8440 | 4.9 |
| 13 | 13:16 | 17.60 | 0.6 | 1.000 | 0.6 | 0.400 | 0.7897 | 1.00 | 0.7897 | 1.300 | 1.0265 | 6.0 |
| 14 | 13:18 | 18.90 | 0.6 | 1.100 | 0.6 | 0.440 | 0.3373 | 1.00 | 0.3373 | 1.430 | 0.4823 | 2.8 |
| 15 | 13:19 | 20.20 | 0.6 | 1.150 | 0.6 | 0.460 | 0.4242 | 1.00 | 0.4242 | 1.495 | 0.6341 | 3.7 |
| 16 | 13:20 | 21.50 | 0.6 | 0.900 | 0.6 | 0.360 | 0.3251 | 1.00 | 0.3251 | 1.170 | 0.3803 | 2.2 |
| 17 | 13:22 | 22.80 | 0.6 | 0.700 | 0.6 | 0.280 | 0.0860 | 1.00 | 0.0860 | 0.910 | 0.0782 | 0.5 |
| 18 | 13:26 | 24.10 | 0.6 | 0.500 | 0.6 | 0.200 | 0.1289 | 1.00 | 0.1289 | 0.650 | 0.0838 | 0.5 |
| 19 | 13:27 | 25.40 | 0.6 | 0.300 | 0.6 | 0.120 | 0.2999 | 1.00 | 0.2999 | 0.390 | 0.1169 | 0.7 |
| 20 | <i>13:30</i> | <i>26.70</i> | <i>0.6</i> | <i>0.400</i> | <i>0.6</i> | <i>0.160</i> | <i>0.1142</i> | <i>1.00</i> | <i>0.1142</i> | <i>0.520</i> | <i>0.0594</i> | <i>0.3</i> |
| 21 | <i>13:32</i> | <i>28.00</i> | <i>0.6</i> | <i>0.200</i> | <i>0.6</i> | <i>0.080</i> | <i>-0.0010</i> | <i>1.00</i> | <i>-0.0010</i> | <i>0.260</i> | <i>-0.0003</i> | <i>0.0</i> |
| 22 | <i>13:32</i> | <i>29.30</i> | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File InformationFile Name
Start Date and TimeST016A.WAD
2011/09/28 12:50:09**Site Details**Site Name
Operator(s)ST016A
DW



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

| File Information | | | Site Details |
|------------------------|------------|---------------------|--|
| File Name | ST016A.WAD | Start Date and Time | 2011/09/28 12:50:09 |
| Quality Control | | | |
| St | Loc | %Dep | Message |
| 2 | 4.60 | 0.6 | High standard error: 0.089 |
| 4 | 7.20 | 0.6 | High standard error: 0.093 |
| 5 | 7.90 | 0.6 | High standard error: 0.086 |
| 6 | 8.50 | 0.6 | High standard error: 0.094 |
| 8 | 11.10 | 0.6 | High number of spikes: 6 |
| 20 | 26.70 | 0.6 | SNR (20.6) is different from typical SNR (32.0) |
| 21 | 28.00 | 0.6 | SNR (49.4) is different from typical SNR (32.0) 0.6 Boundary QC is Good; possible boundary interference |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

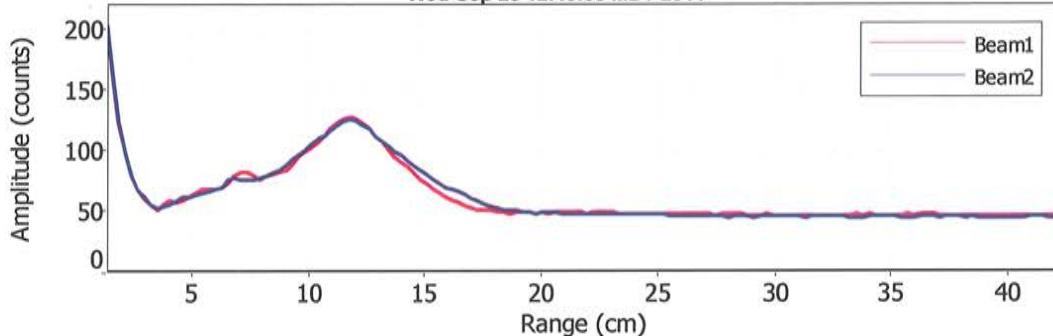
File Name ST016A.WAD
Start Date and Time 2011/09/28 12:50:09

Site Details

Site Name ST016A
Operator(s) DW

Automatic Quality Control Test (BeamCheck)

Wed Sep 28 12:48:08 MDT 2011



- Noise level check - Pass
- SNR check - Pass
- Peak location check - Pass
- Peak shape check - Pass



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

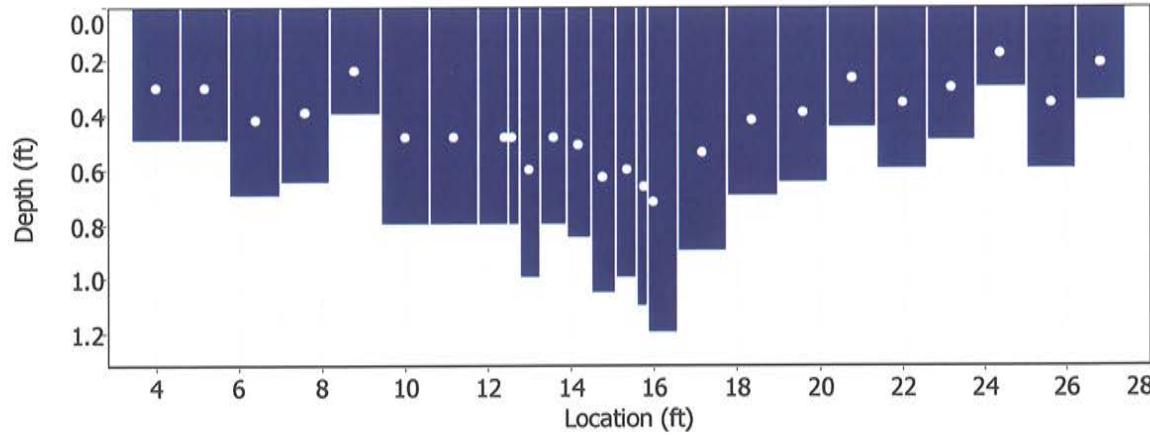
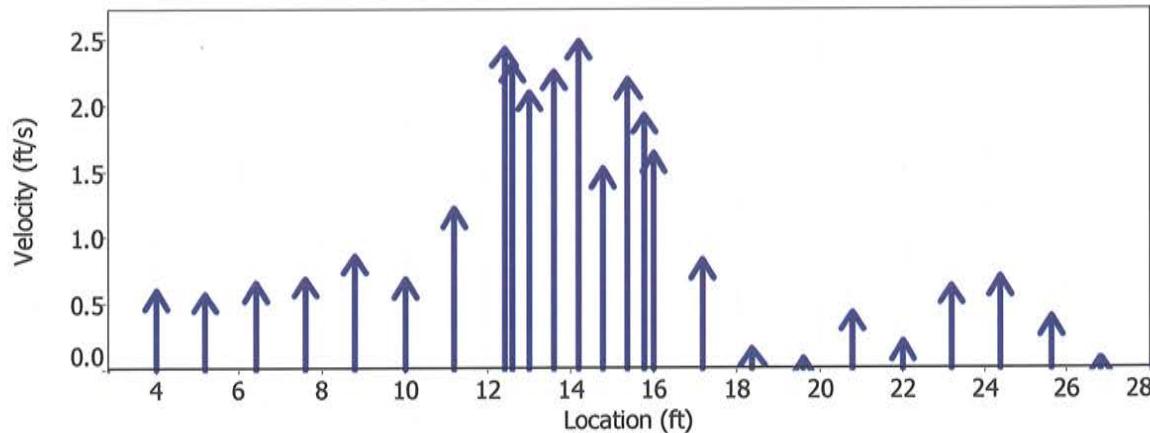
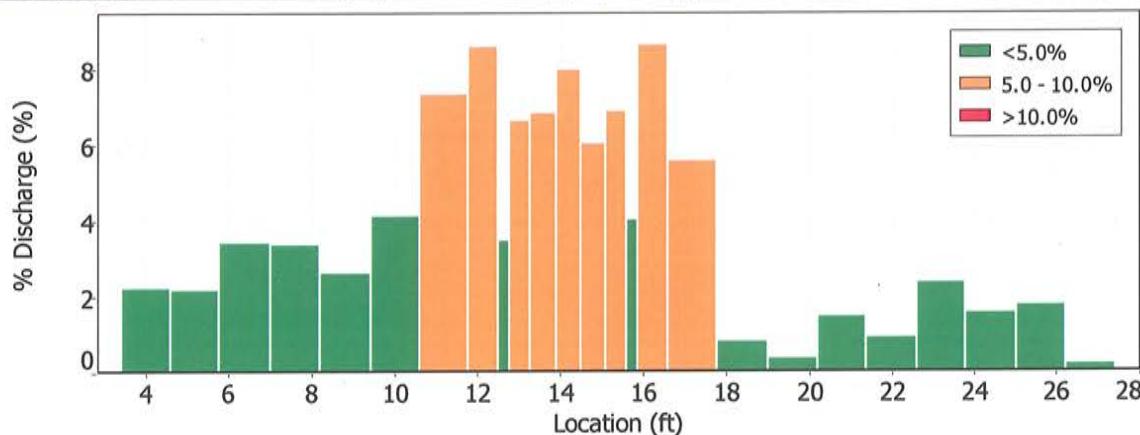
| File Information | | | | Site Details | | | | | | | | |
|---------------------|---------------------|-----------------|----------------|-----------------|-------------|-----------------------|--------|----------------------|---------|------------|--------|-----|
| File Name | ST115A.WAD | | | Site Name | ST115A | | | | | | | |
| Start Date and Time | 2011/09/28 11:12:44 | | | Operator(s) | RB | | | | | | | |
| System Information | | | | | | Units (English Units) | | | | | | |
| Sensor Type | FlowTracker | Distance | ft | Serial # | P3512 | Velocity | ft/s | CPU Firmware Version | 3.7 | Area | ft^2 | |
| Software Ver | 2.20 | Discharge | cfs | | | | | | | | | |
| Summary | | | | | | Discharge Uncertainty | | | | | | |
| Averaging Int. | 40 | # Stations | 27 | Start Edge | REW | Total Width | 25.203 | Mean SNR | 21.1 dB | Total Area | 15.872 | |
| Mean Temp | 46.86 °F | Mean Depth | 0.630 | Disch. Equation | Mid-Section | Mean Velocity | 0.9982 | | | | | |
| | | Total Discharge | 15.8426 | | | | | | | | | |
| Measurement Results | | | | | | | | | | | | |
| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
| 0 | 11:12 | 2.80 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| 1 | 11:12 | 4.00 | 0.6 | 0.500 | 0.6 | 0.200 | 0.5971 | 1.00 | 0.5971 | 0.600 | 0.3583 | 2.3 |
| 2 | 11:13 | 5.20 | 0.6 | 0.500 | 0.6 | 0.200 | 0.5748 | 1.00 | 0.5748 | 0.600 | 0.3449 | 2.2 |
| 3 | 11:14 | 6.40 | 0.6 | 0.700 | 0.6 | 0.280 | 0.6532 | 1.00 | 0.6532 | 0.840 | 0.5489 | 3.5 |
| 4 | 11:15 | 7.60 | 0.6 | 0.650 | 0.6 | 0.260 | 0.6864 | 1.00 | 0.6864 | 0.780 | 0.5354 | 3.4 |
| 5 | 11:16 | 8.80 | 0.6 | 0.400 | 0.6 | 0.160 | 0.8648 | 1.00 | 0.8648 | 0.480 | 0.4151 | 2.6 |
| 6 | 11:18 | 10.00 | 0.6 | 0.800 | 0.6 | 0.320 | 0.6831 | 1.00 | 0.6831 | 0.960 | 0.6557 | 4.1 |
| 7 | 11:19 | 11.20 | 0.6 | 0.800 | 0.6 | 0.320 | 1.2198 | 1.00 | 1.2198 | 0.960 | 1.1710 | 7.4 |
| 8 | 11:20 | 12.40 | 0.6 | 0.800 | 0.6 | 0.320 | 2.4370 | 1.00 | 2.4370 | 0.560 | 1.3638 | 8.6 |
| 9 | 11:43 | 12.60 | 0.6 | 0.800 | 0.6 | 0.320 | 2.3248 | 1.00 | 2.3248 | 0.240 | 0.5570 | 3.5 |
| 10 | 11:37 | 13.00 | 0.6 | 1.000 | 0.6 | 0.400 | 2.1070 | 1.00 | 2.1070 | 0.500 | 1.0545 | 6.7 |
| 11 | 11:22 | 13.60 | 0.6 | 0.800 | 0.6 | 0.320 | 2.2618 | 1.00 | 2.2618 | 0.480 | 1.0856 | 6.9 |
| 12 | 11:38 | 14.20 | 0.6 | 0.850 | 0.6 | 0.340 | 2.4957 | 1.00 | 2.4957 | 0.510 | 1.2731 | 8.0 |
| 13 | 11:23 | 14.80 | 0.6 | 1.050 | 0.6 | 0.420 | 1.5184 | 1.00 | 1.5184 | 0.630 | 0.9563 | 6.0 |
| 14 | 11:39 | 15.40 | 0.6 | 1.000 | 0.6 | 0.400 | 2.1991 | 1.00 | 2.1991 | 0.499 | 1.0981 | 6.9 |
| 15 | 11:41 | 15.80 | 0.6 | 1.100 | 0.6 | 0.440 | 1.9341 | 1.00 | 1.9341 | 0.331 | 0.6397 | 4.0 |
| 16 | 11:24 | 16.00 | 0.6 | 1.200 | 0.6 | 0.480 | 1.6365 | 1.00 | 1.6365 | 0.841 | 1.3763 | 8.7 |
| 17 | 11:25 | 17.20 | 0.6 | 0.900 | 0.6 | 0.360 | 0.8255 | 1.00 | 0.8255 | 1.080 | 0.8915 | 5.6 |
| 18 | 11:26 | 18.40 | 0.6 | 0.700 | 0.6 | 0.280 | 0.1532 | 1.00 | 0.1532 | 0.840 | 0.1287 | 0.8 |
| 19 | 11:27 | 19.60 | 0.6 | 0.650 | 0.6 | 0.260 | 0.0735 | 1.00 | 0.0735 | 0.780 | 0.0573 | 0.4 |
| 20 | 11:29 | 20.80 | 0.6 | 0.450 | 0.6 | 0.180 | 0.4314 | 1.00 | 0.4314 | 0.540 | 0.2331 | 1.5 |
| 21 | 11:30 | 22.00 | 0.6 | 0.600 | 0.6 | 0.240 | 0.2051 | 1.00 | 0.2051 | 0.720 | 0.1477 | 0.9 |
| 22 | 11:31 | 23.20 | 0.6 | 0.500 | 0.6 | 0.200 | 0.6342 | 1.00 | 0.6342 | 0.600 | 0.3806 | 2.4 |
| 23 | 11:32 | 24.40 | 0.6 | 0.300 | 0.6 | 0.120 | 0.6952 | 1.00 | 0.6952 | 0.360 | 0.2502 | 1.6 |
| 24 | 11:34 | 25.60 | 0.6 | 0.600 | 0.6 | 0.240 | 0.3970 | 1.00 | 0.3970 | 0.720 | 0.2859 | 1.8 |
| 25 | 11:35 | 26.80 | 0.6 | 0.350 | 0.6 | 0.140 | 0.0807 | 1.00 | 0.0807 | 0.420 | 0.0339 | 0.2 |
| 26 | 11:35 | 28.00 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File InformationFile Name
Start Date and TimeST115A.WAD
2011/09/28 11:12:44**Site Details**Site Name
Operator(s)ST115A
RB



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

File Name ST115A.WAD
Start Date and Time 2011/09/28 11:12:44

Site Details

Site Name ST115A
Operator(s) RB

Quality Control

| St | Loc | %Dep | Message |
|----|-------|------|---|
| 5 | 8.80 | 0.6 | High SNR variation during measurement: 4,7,5,2 |
| 6 | 10.00 | 0.6 | High angle: -22 |
| 10 | 13.00 | 0.6 | High standard error: 0.127 |
| 13 | 14.80 | 0.6 | High standard error: 0.107 |
| 15 | 15.80 | 0.6 | High standard error: 0.098 |
| 16 | 16.00 | 0.6 | High number of spikes: 5 |
| 18 | 18.40 | 0.6 | High SNR variation during measurement: 6,0,6,5 |
| 19 | 19.60 | 0.6 | High SNR variation during measurement: 6,5,6,0 |
| 20 | 20.80 | 0.6 | High angle: -26 0.6 High SNR variation during measurement: 4,3,5,2 |
| 21 | 22.00 | 0.6 | High SNR variation during measurement: 4,7,5,6 |
| 22 | 23.20 | 0.6 | High angle: -33 |
| 23 | 24.40 | 0.6 | High angle: -21 |
| 25 | 26.80 | 0.6 | High angle: 50 0.6 High SNR variation during measurement: 6,0,5,6 |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

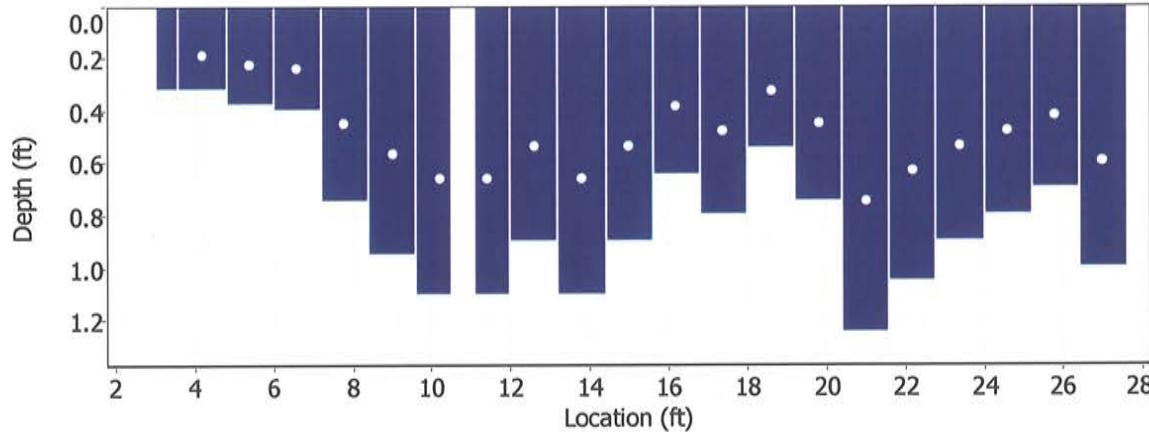
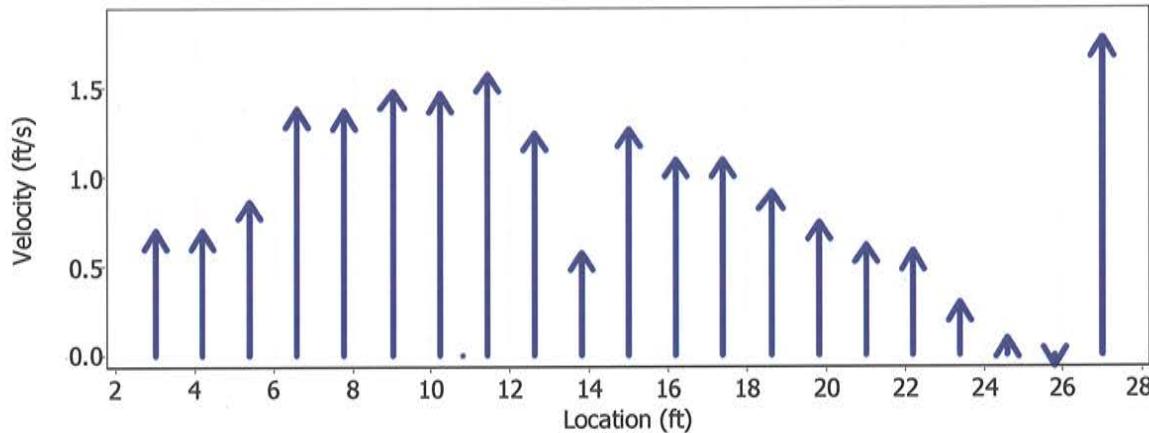
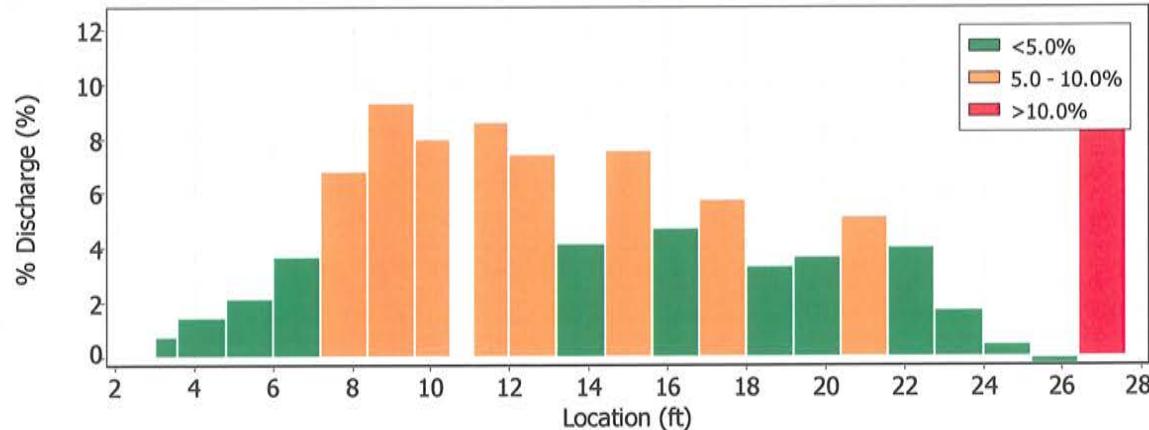
| File Information | | | | Site Details | | | | | | | | |
|----------------------|---------------------|-----------------|-----------------|--------------|------|-----------------------|----------|----------|---------|-------|---------|------|
| File Name | STO5.WAD | | | Site Name | STO5 | | | | | | | |
| Start Date and Time | 2011/09/28 08:30:20 | | | Operator(s) | DW | | | | | | | |
| System Information | | | | | | Discharge Uncertainty | | | | | | |
| Sensor Type | FlowTracker | Units | (English Units) | | | | Category | ISO | Stats | | | |
| Serial # | P3512 | Distance | ft | | | | Accuracy | 1.0% | 1.0% | | | |
| CPU Firmware Version | 3.7 | Velocity | ft/s | | | | Depth | 0.3% | 9.7% | | | |
| Software Ver | 2.20 | Area | ft^2 | | | | Velocity | 1.1% | 6.3% | | | |
| | | Discharge | cfs | | | | Width | 0.1% | 0.1% | | | |
| Summary | | | | | | Overall | | | | | | |
| Averaging Int. | 40 | # Stations | 23 | | | | Overall | 3.3% | 11.6% | | | |
| Start Edge | REW | Total Width | 25.203 | | | | | | | | | |
| Mean SNR | 31.5 dB | Total Area | 19.153 | | | | | | | | | |
| Mean Temp | 44.93 °F | Mean Depth | 0.760 | | | | | | | | | |
| Disch. Equation | Mid-Section | Mean Velocity | 0.9481 | | | | | | | | | |
| | | Total Discharge | 18.1597 | | | | | | | | | |
| Measurement Results | | | | | | | | | | | | |
| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
| 0 | 08:30 | 3.00 | None | 0.320 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.6978 | 0.192 | 0.1339 | 0.7 |
| 1 | 08:30 | 4.20 | 0.6 | 0.320 | 0.6 | 0.128 | 0.6978 | 1.00 | 0.6978 | 0.384 | 0.2679 | 1.5 |
| 2 | 08:32 | 5.40 | 0.6 | 0.380 | 0.6 | 0.152 | 0.8632 | 1.00 | 0.8632 | 0.456 | 0.3936 | 2.2 |
| 3 | 08:34 | 6.60 | 0.6 | 0.400 | 0.6 | 0.160 | 1.3789 | 1.00 | 1.3789 | 0.480 | 0.6619 | 3.6 |
| 4 | 08:36 | 7.80 | 0.6 | 0.750 | 0.6 | 0.300 | 1.3668 | 1.00 | 1.3668 | 0.900 | 1.2303 | 6.8 |
| 5 | 08:40 | 9.00 | 0.6 | 0.950 | 0.6 | 0.380 | 1.4797 | 1.00 | 1.4797 | 1.140 | 1.6872 | 9.3 |
| 6 | 08:41 | 10.20 | 0.6 | 1.100 | 0.6 | 0.440 | 1.4590 | 1.00 | 1.4590 | 0.990 | 1.4439 | 8.0 |
| 7 | 09:25 | 10.80 | 0.6 | 0.000 | 0.6 | 0.400 | 1.7316 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| 8 | 08:43 | 11.40 | 0.6 | 1.100 | 0.6 | 0.440 | 1.5709 | 1.00 | 1.5709 | 0.991 | 1.5563 | 8.6 |
| 9 | 08:45 | 12.60 | 0.6 | 0.900 | 0.6 | 0.360 | 1.2444 | 1.00 | 1.2444 | 1.080 | 1.3440 | 7.4 |
| 10 | 08:51 | 13.80 | 0.6 | 1.100 | 0.6 | 0.440 | 0.5735 | 1.00 | 0.5735 | 1.320 | 0.7571 | 4.2 |
| 11 | 08:58 | 15.00 | 0.6 | 0.900 | 0.6 | 0.360 | 1.2674 | 1.00 | 1.2674 | 1.080 | 1.3688 | 7.5 |
| 12 | 09:01 | 16.20 | 0.6 | 0.650 | 0.6 | 0.260 | 1.0948 | 1.00 | 1.0948 | 0.780 | 0.8540 | 4.7 |
| 13 | 09:02 | 17.40 | 0.6 | 0.800 | 0.6 | 0.320 | 1.0945 | 1.00 | 1.0945 | 0.960 | 1.0507 | 5.8 |
| 14 | 09:06 | 18.60 | 0.6 | 0.550 | 0.6 | 0.220 | 0.9167 | 1.00 | 0.9167 | 0.660 | 0.6049 | 3.3 |
| 15 | 09:08 | 19.80 | 0.6 | 0.750 | 0.6 | 0.300 | 0.7438 | 1.00 | 0.7438 | 0.900 | 0.6695 | 3.7 |
| 16 | 09:09 | 21.00 | 0.6 | 1.250 | 0.6 | 0.500 | 0.6191 | 1.00 | 0.6191 | 1.500 | 0.9287 | 5.1 |
| 17 | 09:11 | 22.20 | 0.6 | 1.050 | 0.6 | 0.420 | 0.5810 | 1.00 | 0.5810 | 1.260 | 0.7321 | 4.0 |
| 18 | 09:12 | 23.40 | 0.6 | 0.900 | 0.6 | 0.360 | 0.2930 | 1.00 | 0.2930 | 1.080 | 0.3164 | 1.7 |
| 19 | 09:13 | 24.60 | 0.6 | 0.800 | 0.6 | 0.320 | 0.0906 | 1.00 | 0.0906 | 0.960 | 0.0869 | 0.5 |
| 20 | 09:18 | 25.80 | 0.6 | 0.700 | 0.6 | 0.280 | -0.0627 | 1.00 | -0.0627 | 0.840 | -0.0527 | -0.3 |
| 21 | 09:21 | 27.00 | 0.6 | 1.000 | 0.6 | 0.400 | 1.7700 | 1.00 | 1.7700 | 1.200 | 2.1242 | 11.7 |
| 22 | 09:21 | 28.20 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File InformationFile Name
Start Date and TimeSTO5.WAD
2011/09/28 08:30:20**Site Details**Site Name
Operator(s)STO5
DW



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

| | |
|---------------------|---------------------|
| File Name | ST05.WAD |
| Start Date and Time | 2011/09/28 08:30:20 |

Site Details

| | |
|-------------|------|
| Site Name | ST05 |
| Operator(s) | DW |

Quality Control

| St | Loc | %Dep | Message |
|----|-------|------|--|
| 10 | 13.80 | 0.6 | High angle: 24 |
| 19 | 24.60 | 0.6 | High SNR variation during measurement: 5.6,5.6 |
| 20 | 25.80 | 0.6 | High angle: -174 0.6 High SNR variation during measurement: 5.6,6.0 |



Discharge Measurement Summary

Date Generated: Wed Jan 25 2012

File Information

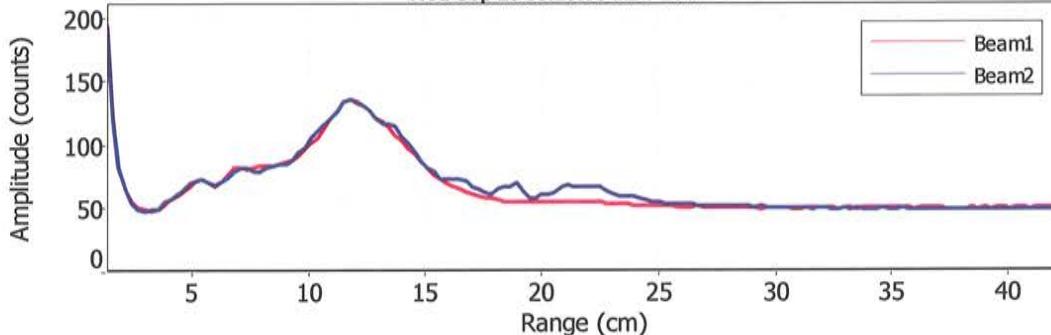
File Name STO5.WAD
Start Date and Time 2011/09/28 08:30:20

Site Details

Site Name STO5
Operator(s) DW

Automatic Quality Control Test (BeamCheck)

Wed Sep 28 08:28:36 MDT 2011



- Noise level check - Pass
- SNR check - Pass
- Peak location check - Pass
- Peak shape check - Pass

Sampling Activities Report
Carpenter Creek -Cascade County, Montana
Final, Revision 0

Attachment B
Scanned Field Logbook Pages

Big Dancer / Snow Creek

6/27/11

6/27/11 LSC-101

Time 13:20

pH 7.83 s.u.

Temp 7.72 °C

D.O. 9.36 mg/L

Cond 103.4 us/cm

2 pictures taken at site with
1 upstream facing upstream towards
confluence and 1 downstream.
Weather was warm, sunny, and
breezy.

Samples collected by Ryan Behnke
DM, TR, DOC, TML. No samples collected
No flow taken due to high flow
danger

Carpenter Snow Creek

6/27/11

LSC-102

6/27/11 13:45

pH 7.76 s.u.

Temp 7.79 °C

D.O. 9.98 mg/L

Cond 108.9 us/cm

Picture taken from east bank
of ~~Big Creek~~ ~~Stream~~ Carpenter Creek confluence.
Ambient temperature @ 80°F
Sunny and breezy.

Collection of samples were 50-70 meters
upstream of Carpenter Creek confluence.
Riparian zone was heavily vegetated
on both sides.

DM, TR, DOC, TML (Meters)

No flow taken due to dangerous
conditions

Copperleaf Creek

6/27/11

Water clarity - clear

CSC-103

6/27/11

Time 14:00

pH 7.40 sec.

Temperature 8.61 °C

Conductivity 77.92 μmho

D.O. 9.72 mg/l

Samples collected 20 meters above
road crossing. Water running
clear and very turbid.

Photograph taken at site

Collected samples for DM, TR, DO, ~~H2S/Hg~~,
Weather was sunny, warm w/ the
temperatures @ 80° F

CSCMO

6/27/11

(RE)

CSC-103A

6/27/11 1515

pH ^{7.2} 7.29

Temp 8.66

COND. 76.49 μmho

D.O. 9.50 mg/l

Samples collected Above Bridge
Photo TAKEN

Creek - Clear - TURGID

Sunny, warm, ~80° F

CSCmo

6/27/61

CSC mo

6/27/61

(RD)

(RD)

CSC - 104A Time 1540

pH 7.27
Temp 9.17 °C
COND. 71.93 $\mu\text{s}/\text{cm}$
D.O. 9.27 $\mu\text{g}/\text{L}$

CSC - 104

Time 1545

pH 7.26
Temp 8.87 °C
COND. 73.47 $\mu\text{s}/\text{cm}$
D.O. 9.46 $\mu\text{g}/\text{L}$

CSC - 105

Time 1630

pH 7.21
Temp 6.95 °C
COND. 82.41 $\mu\text{s}/\text{cm}$
D.O. 9.71 D.O. $\mu\text{g}/\text{L}$

CSC - 101 Time 1715

pH 7.13
Temp 12.49 °C
COND. 61.59 $\mu\text{s}/\text{cm}$
D.O. 8.59 $\mu\text{g}/\text{L}$

CSC - 111A Time 1725

pH 6.96
Temp 8.04 °C
COND. 69.48 $\mu\text{s}/\text{cm}$
D.O. 9.16 $\mu\text{g}/\text{L}$

end of the day clear
Sunny ~ 800 NO wind
Stream FAIRLY CLEAR

Carpenter Snow Creek

6/27/11 ST-005

Time 15:15
 pH 7.85
 Cond. 105.9 $\mu\text{S/cm}$
 Temp 9.99 $^{\circ}\text{C}$
 D.O. 8.77 mg/L

Samples collected for DM, TR, DOC, AIK/Alkalinity and were collected just upstream of bridge. Water flowing fast and turbid. Weather was sunny and warm @ 80 $^{\circ}\text{F}$.

6/27/11 ST-005A

Time 15:45
 pH 6.55 S.U.
 Cond. 220 $\mu\text{S/cm}$
 Temp 16.45 $^{\circ}\text{C}$
 D.O. 9.15 mg/L

Collected sample in wetland pond weather for DM, DOC, TR, AIK/Alkalinity weather breezy, sunny and warm @ 80 $^{\circ}\text{F}$

Carpenter Snow Creek

6/27/11 ST 005 B

Time 16:00
 pH 6.43 S.U.
 Cond. 153 $\mu\text{S/cm}$
 Temp 15.74 $^{\circ}\text{C}$
 D.O. 8.72 mg/L

Collected samples for DM, TR, DOC, AIK/Alkalinity and collected at the outfall of the wetland just below the wooden plant spanning the flowing water

6/27/11

ST-004

Time 16:45
 pH 7.88 S.U.
 Cond. 104 $\mu\text{S/cm}$
 Temp 10.27 $^{\circ}\text{C}$
 D.O. 9.75 mg/L

Collected samples for DM, TR, DOC, AIK/Alkalinity and they were collected 5 meters upstream of bridge crossing Bell Creek
 Verified location with Trimble GPS unit

Carpenter Snow Creek Mining Site 6/27/11

Continued from page 81

Tellings are located on west side Hwy 89. Bridge leads to a fenced area that is marked "No Shooting Public Notice and a cattle trailer on west side
No flows measurements taken

6/27/11 ST-014

Time 17:15

pH 7.86 S.U.

Condu 106.4 ps/km

Temp 10.19 °C

D.O. 9.70 mg/l

Collected samples for DM, TR, DOC, AIC/ANION
Samples were collected 100 meters downstream of sign that shows "Historic point 1/2 mile" and across from road that leads to mine tailings.
2 Pictures taken showing upstream and downstream
No flows taken due to dangerous conditions

Carpenter Snow Creek Mining Site 6/27/11

6/27/11 ST-015

Time 17:30

pH 6.88 S.U.

Condu 222 ps/km

Temp 13.48 °C

D.O. 8.83 mg/l

Collected samples for DM, TR, DOC, AIC/ANION
in Rock Creek just above confluence with Belt Creek.

Weather: Sunny, Warm and breezy
Ambient temp @ 80°F

2 pictures taken

Copper Creek Monitor Site

6/28/11 ST-015A

Time 17:45

Temp 10.14 °C

pH 7.75 S.d.

D.O 9.65 mg/L

Cond 108 µS/cm

Collected samples for DM, TR, DOC, Alk+Anions
Samples were collected just below
confluence of Rock Creek & Bell Creek
No flows were taken due to safety
reason

6/28/11 ST-016A

Time: 18:00

Temp 9.94 °C

pH 7.84

D.O. 9.68 mg/L

Cond 105.6 µS/cm

Collected samples for DM, TR, DOC, Alk+Anions
Adjacent to the Mayor's house
just below flow over area

Lucky Creek CSC-111 0850

larger flume

6/28/11

15 in front units not on ruler

05 in back

Pictures

6/28/11 CSC-112 - 0912 Water

Samples collected COM,TR,DOC, Alk+Anions
upstream of bridge

flows collected downstream of bridge

Water Quality parameters

Temp 50.3 °C

pH 7.20

Cond 71.95 µS/cm

DO 10.28 mg/L

Pictures

upstream + downstream (95+96)

CSC-114

6/28/11 0945 water collected
for DM,TR,DOC, alk+anions.

collected upstream of culvert

Pictures 97+98

Con't CSC-114

Water quality parameters

Temp 8.77°C

pH 7.12

SC 82.74 μs/cm

DO 9.14 mg/L

• 67 cfs

CSC-115 - 6/28/11

Sampled Water @ 1010 upstream of
culvert, (DM, TRM, DOC, Alk + anions)
Water Quality parameters.

T 9.09°C

pH 7.32

SC 126.2 μs/cm

DO 9.12 mg/L

Pictures taken upstream and
downstream (99+100)

6/28/11

CSC-113

Water samples and flows collected
at previous sampling location
recommended moving station downstream
as stream has cut new channel
that flows into Carpenter creek

below station 113

Watersample collected @ 1035

(DM, DOC, TRM, Anions + alkalinity)

pictures taken upstream + downstream

106 + 107

Water Quality parameters

Temp 6.06°C

pH 7.18

SC 70.88 μs/cm

DO 10.01 mg/L

CSC-116A - 6/28/11 1145

Water sample collected (DM, DOC, TRM, Alk
Anion
Flow

CFS 32.796

Water quality

Temp 5.86

pH 7.19

SC 50.27 μs/cm

DO 10.08 mg/L

Pictures taken up + downstream

CSC-116 - upstream of Berg Creek

6/28/11 1245

Water samples collected for DM, TRM,

DOC, Alk and anions

pictures taken down & up stream 118, 119

WQ parameters

T 5.79°C

pH 7.28

SC 42.25 µS/cm

DO 10.05 mg/L

CSC 118 - 6/28/11

Berg Creek is very difficult
to obtain flow. Braided, wooded
and abrupt change of course

Water samples collected @ 1305

(DM, TRM, DOC, anions + alkalinity)

pictures taken up & downstream (120, 121)

Water Quality parameters

Temp 16.61°C SC 45.93 µS/cm

pH 7.17 DO 9.75 mg/L

CSC-117 6/28/11

pictures 122+123 (down & up stream)

Water samples collected @ 1345

CFS = 0.276

Temp = 16.607

pH = 7.43

Conduct = 1583

DO = 7.69

Creek splits into new
channel after conlect.
Creek now enters Carp Creek
below 116 A & flows
through Homestead.

CSC-117a 6/28/11 1455

Water samples collected just upstream
of culvert. (DOC, DM, TSM, alkaline anions)

Water Quality parameters

Temp 17.54 °C

pH 3.36

SC 1926 µS/cm

DO 7.39 mg/L

pictures taken down & up stream (127+128)

Flows taken w/ large ~~plum~~ plume

0.4 up 0.13 down

readings on ruler (pic 129)

CSC-120 6/28/11 1550

No flows taken - stream too deep
to safely collect flow data

pictures taken down and up stream (130+131)

Water samples collected upstream
of road crossing.

WQ parameters

Temp 6.31 °C

DO 9.85 mg/L

pH 7.35

SC 23.56 µS/cm

CSC-120a- 6/28/11

(132-133). Pictures taken down/upstream

Water samples collected at 1620

(DOC, DM, TSM, Alkaline anions)

Samples collected near camp
site

Water Quality parameters

Temp 6.62 °C

pH 7.51

SC 40.27 µS/cm

DO 9.80 mg/L

Flow 29.8 cfs

CSC-119 6/28/11

Sampled water and flows just
above road crossing (1645)

pictures (134+135) taken down +
up stream

Water Quality parameters

Temp 11.88 °C

pH 7.56

SC 68.05 µS/cm Taken here

DO 8.63 mg/L

DUPPLICATE *

CEES = 0.453

Difficult Flow. Very braided lots
of back water

6/29/11

B 6/29/11

CSC-106 - Sampled downstream of
large woody debris - Steep hillside
on one side of channel

pictures taken down + up stream (138+139)

Water collected at 0900 (DO, DMY, TRM,
Anions + Alk)

Water Quality parameters

Temp 6.22°C

pH 7.00

SGnd. 76.22

DO 10.48 mg/L

Flows collected, flow = 238 cfs

CSC-110/109A 6/29/11

Water-Samples collected above
road @ 1000. (DM, DOG, TRM, Anions
and alk)

pictures taken down + up Stream (140-141)

Water Quality parameters

Temp 4.92°C

pH 7.15

SG 34.99 mg/cm

DO 10.64 mg/L

Flow 11.01 cfs

CSC-108 6/29/11

pictures M2 + M3 taken down + up
stream.

Water-Samples collected @ 1055
(DM, TRM, DOG, Anions + Alkalinity)

Water Quality parameters

Temp 7.09 °C

pH 6.65

SGnd 129.8 cfs/km

DO 10.06 mg/L

Flow = 52843 cfs

High gradient Stream, fast
moving. Many logs & debris

Location

Date

Project Client

CSC- 107 6/29/11 1125

Highly braided stream flowing
through wetland. Collected

Water sample at one of the
larger streams near large pine trees.

Water samples collected for DOC, DM,
TRM, Anions + Alk.

Pictures taken down & upstream
(149+150)

Temp 10.81°C

pH 6.43
Condo 141.4
DO 9.05

CSC 113 opp. 1 6/29/11

Picture taken down and upstream
(146+147) - Haystack Creek now
flows in just above old rusted
heater (in upstream picture)

WFS placed straw bales throughout
this area CFS = 35.656

Temp 9.53 Condo 63.38
pH 7.12 DO 9.58

Water Samples collected @ 1225
(DM, DOC, TRM, Alk + Anions)

CSC- 116a- opp 2- 6/29/11

Sample collected near pond and
cabins, below where braided
stream becomes one channel again

Water Sample Collected @ 1305
(DOC, DM, TRM, Anion Alk)

Pictures taken down & up stream
(149+150)

Temp 9.33°C

pH 7.11
Condo 67.3
DO 9.6

STO16 - 6/29/11

Water Samples collected down-
stream of culvert next to log
cabin, orange stained stream
low flow. (DM, DOC) TR, Anions
and alkalinity

STO16 cont

Water Quality parameters

Temp 18.92°C

pH 7.41

SC 435.0 us/cm

DO 7.72 mg/L

Weather changing from sunny to
storm clouds

pictures taken down + upstream
(151+152)

STO08 - 6/29/11

Water Samples Collected @ 1420

(DOC, DM, TDS, Anions and alkalinity)

Sample collected downstream of bridge

Water a bit cloudy. High flows.

pictures taken down + upstream (153-154)

Water Quality parameters

Temp 10.98°C

pH 7.75

SC 106.1 us/cm

DO 9.39 mg/L

STO09B 6/29/11

Water sample collected @ 1442

downstream of culvert

Very low flow, soft bottom,
flaots not collected

Water Quality parameters

Temp 19.30°C

pH 6.94

SC 182.7 us/cm

DO 7.20 mg/L

pictures taken down + upstream
(155+156)

STO09 - 6/29/11

Water sample collected @ 1505

Water collected in tributary

to wetland (DM, TDS, DO, Anions & Alk)

pictures taken down + upstream

157+158

Water Quality parameters

Temp 17.45°C

pH 7.05

SC 521.2 us/cm

DO 8.10 mg/L

Location

Date

Project / Sheet

Location

Date

Project / Sheet

ST009 ^{KW} A 6/29/01

Water sample collected near cabin, north of the community center. (DOC, DM, TR, Ammon + Alk)
1520 - Water Cloudy (in wetland)

Water Quality parameters

Temp 16.02 °C

pH 7.08

SC 78.45 µS/cm

DO 8.13 mg/L

Pictures taken of Wetland Sampling
Location (159)

ST010 6/29/11

Water samples collected @ 1545 upstream of the O'Brien Street bridge
(DOC, DM, TRM, Ammon + Alk)

Water Quality parameters

Temp 10.73 °C

pH 7.77

SC 111.3 µS/cm

DO 9.37

Flows very high / no flow collected

100
pictures taken down upstream
(162-161)

ST010 A 6/29/11

high flows. Water a little
cloudy. Water sample collected @
1605 (DM, DOC, TR, Ammon + Alk)

Water Quality parameters

Temp 16.03 °C

pH 7.86

SC 113.0 µS/cm

DO 9.58 mg/L

Pictures taken down + up stream
(162 + 163)

Dup and Blank collected
@ this site.

07/12/11

07-084-AD3

No water from adit. Structure
is collapsed

07-084-AD2

- Adit collapsed - some H₂O seeping
 - Water samples taken with syringe
 - Photos taken of adit 3-on
 - Photos of collapsed pits
- Davies et al.
Camera -
EPA Helena

- no water quality parameters

taken

- Dm + TRm samples taken

07-084-AD1

- Adit - no water present
- Collapsed, metal debris
- Talus around area
- open shaft above this adit

Adit photos taken by Brett
Friel
US Forest Service

07/12/11

Adit 07-084-AD1

11:10

TEMP.

6.23

pH

7.05

COND

435.4 μS/cm

DO

-2.50 **

Adit water is visibly clear, no staining

Adit open, framed by timber

There is a small framed box

C Slanted roof on timber sides about 10 yards from adit opening
Sunny, no wind.

Samples taken PM, TRM

Rock Creek moves around the pile "North Adit discharge enters stream @ top of pile"

Location

Date

Project / Client

Forest Service archaeologist
bFriels@fs.fed.us - has

07/12/11 Queen of the Hills 1 and 2

07-085-WR1-WR4, 13:05

adits 07-085-AD3 + 07-085-AD4

Followed road from

+ parked close to shed (see on satellite map)

07-085-AD3 - dry, entrance collapsed.

Timbers around entrance are wire mesh gate present and mostly intact

07-085-AD4 - dry, entrance has entrance timbers present. Adit is

obviously collapsed and fill from above has filled in entrance; cross piece timber that marks entrance to adit is only 8-16" above fill. There is also a good bit of rock & soil that appears has moved down between the adits and below toward 07-085-WR1

* An opportunistic sample to be taken to cover area between the adits + toward 07-085-WR1

"Queen of the Hills - OP1"

Location

Date

Brett Friels

Project / Client

GPS points + photos to share

07/12/11 Visited 07-085-AD5

Dry. Hole is open and either is shallow horizontally or takes a turn. The hill below Adit is deeply cut and appears to be a great volume of waste rock to the top of 07-085-WR6

Photos taken from both sides and down the hill along cut + waste pile

07/12/11 1630 Note: See historical

Adits - 07-085-AD1 map from Pioneer Technical Services 1984

- 07-085-AD2

At top of Queen of the Hills 5

07-085-AD1

- DRY. Located ~⁵⁰₃₅ yards NW of shaft (very prominent feature that is fenced w/ metal post and barbedwire)

07-085-AD2

- DRY. Small feature. Located SE of shaft ~20 yards, immediately left of very small foundation

Photo taken 3/2012 by Brett Friels

07/13/11 88. 11:45

Adit 07-087-AD1

Sunny, clear, no wind

Adit entrance intact. Timber structure in place. Two headwaters adit flows immediately into a wide shallow stream. Orange brown precipitate.

Stream splits & flows under old bridge to left when looking at adit

Water Quality Parameters:

Temp 81.74 °F

pH 6.59

Cond 874.9 µS/cm

*DO -2.5 probe not working
Samples taken for Dm, TRM,
Sediment

07/13/11 88 13:25

Stream sample below Silver
Dike tailings

Temp

pH

Cond

DO

Sunny, high 70's, no breeze
Area sampled on the tailings side
of a two lane bridge that crossed
creek

Water samples taken for Dm
and TRM

Duplicate sample taken
Sediment sample taken

Water Quality Parameters:

Temp 9.98 °C

pH 7.27

Cond 50.37

DO NO DO! NOT working

Carpenter/Snow Creek

Project / Client

07/13/11

07-065-WR10

07/13/11

Queen of the Hills 6 1045AM.

Very little discharge from Ad-T. Flow or Flume not possible. Used a sponge to extract water for total Zn/Cu, Metals & Diss Metals. No sediment available. Site lies in the center of a small drainage which may collect water at times, but no evidence of gullying or channelizing of water through or around talus rock pile. Lots of building debris & trash. Accessed from road above (200 ft below road).

-RB

Location _____ Date _____

Project / Client

07/13/11 07-135-AD2 8J
 1550 adit @ Silver Dyke Adit 2
 Sunny Clouds or hov. 50%
 - Dust from samples taken
 - Sediment taken
 - Waste pile directly uphill
 from adit ~ 50 yards
 1 inch throat flume results:
 0.36 in
 0.080 out
 Temp 12.3 °C
 pH 3.17
 Cond 3131 µS/cm
 # DO - 2.5 probe not operational

Copperas/Snow Creek 7/12/11

10:40 AM

Lower Black Diamond Bay - West Rock Pile

Sunny, Slight Breeze, mid 70's. Station is located above BDJ Mine. A stream comes in Southeast of the mine and station is located above stream. Stream flows below mine. Split samples were taken and provided to FMX representative. Station GPS'd in the field.

07-174-SW1/SE2

10:40

Temp 7.58°C

pH 6.81

Cond. 133.7 mS/cm

DO 9.87 mg/L

Copperas/Snow Creek 7/12/11

10:45 AM

Lower Black Diamond Bay - West Rock Pile

Sunny, slight breeze. Sample location is fairly wooded area. Area around Black Diamond Bay conducive for passive metals treatment. Station GPS'd. Sediment & SW samples taken.

07-174-SW1/SE2

11:15

Temp 7.94°C

pH 6.81

Cond. 133.7 mS/cm

DO 9.87

Carpenter Snow Creek 9/12/11

Lower Rebellion AD2

Upper Rebellion

AD2

12:45

Temp 6.64 °C

pH 3.72

Cond 326 mg/L

DO 10.34 mg/L

Sample location AD2. Partly cloudy
low DO. Stream has an orange
tinge to it. Good flow and we will
take stream flows tomorrow. Photo
taken.

Carpenter Snow Creek 7/12/11

Upper Rebellion AD1

13:30pm

Sampling location AD1 is
dry. No sample taken. When
it rains, crosses the road &
transverses a culvert to the west
of the road.

Upper Rebellion 07-157-AD3

13:55pm

AD3 is partly cloudy. Good stream
flow. SW sample taken. Stream has
an orange tinge to it.

Temp 5.89 °C

pH 3.72

Cond. 2,104 mg/L

DO 10.36 mg/L

Carpenter Snow Creek 7/12/11

Flood Stage

Upper Rebellion

West Rock 1

07-157-WR1

14:10

Had to move the location of the sampling point because of the location of collapsed building.

Partly cloudy, low 80s

Did a new point

07-157-WR2

14:20

~~Note that~~ Identified correct location for WR2. Was previously coded as WR1 in the GPS Unit.

Polygon pile created using GPS

Partly cloudy, low 80s

Carpenter Snow Creek 7/12/11

Lower Rebellion

Went to the location for lower rebellion at 14:45. Passed a structure that based on the garbage around the structure indicated it was a habitable structure in the past. Lower rebellion looks to be a open meadow and not a mining feature.

Temp 6.96 °C

pH 3.7

Cond. 318.7 $\mu\text{s}/\text{cm}$

DO 10.01 mg/L

Photo taken.

Carpenter Snow Creek 7/12/11

Bug Seven

07-15B - Scop 1 15:45
Temp 5.03 °C
pH 6.63
Cond 86.02 mS/cm
DO 9.37 mg/L

Opportunistic sample taken in a
scop coming in lower bench below
the assay building. Photo taken of
Scop. Overall low DO's.

07-15B WR1 15:15

Deviating from sample design based
on field observation. Coarse LS
distr. buried unevenly which doesn't
allow for sample replication.
No picture taken

07-15B - WR2 15:55

Deviating from sample collection
protocol due to field observations.
Picture taken.

07-15B - SW1 16:10
- SE1

Temp 7.52 °C
Cond 697.4 mS/cm
pH 4.36
DO 9.91 mg/L

GPS logged as BD-S. Need to
switch to SW1/SE1. Two edit
discharges from above merge into
one surface water sample below.
Picture taken. Cloudy - rain
imminent. Moving to upper
bench for protection in case of
thunderstorms.

Need to go back on 7/13 for SW1
See page 43 for 7/13 results
Sediment not retained from 7/12

Upper Rebellion - 07-157-A02

Frontal Contact - 9:40 am

Upper Rebellion - 07-157-A02

Black Diamond Mine - 10:20 am
Frontal Contact - 10:20 am

Upper Rebellion

Black Diamond Mine

Frontal Contact

Upper Rebellion 07-157-A02 - Dup

9:40 am

Duplicate Sample was taken here

Carpenter Snow Creek 7/13/00

BDS-OPP-WRI

9:15 am

In historic reports (Chen Northern, 1938),
a mine was identified that was located
on the Black Diamond (Big) Mine claim.
An opportunistic sample was taken
at this location. A photo was
taken.

OP-156-SW-1

10:05

Temp: 7.47°C

pH: 4.26

Cond: 596.8 ppm

DO: 9.73 mg/l

Sunray: 78° on sec

Copper Creek 7/13/11

Copper Creek

7/13/11

OT-155-Sep2

7/13/11

10:25

Say just below AD2

Temp: 5.45 °C

pH: 4.61

Cond: 1857 us/cm

DO: 1.46 mg/l

OT-155-AD2

7/13/11

10:30

Temp: 5.73 °C

pH: 4.64

Cond: 127 us/cm

DO: 0.17 mg/l

Sunny, low 70s, slight breeze

Sep 2 has iron oxidation coming out while
Adt 1 shows white coloration on rocks

OT-156-AD2

11:00

Temp: 11.75 °C

pH: 6.33

Cond 7.5 us/cm

DO 3.62 mg/l

Shady location, slight breeze, sunny.
Different bearing than original GPS
location. GPS'd new location. Water
was moderately turbid disappears about
20 feet from sampling location. ~~the~~ (ing)
difficulties with In Situ Parameter Probe.
Field reading may be erroneous.

Location Carpenter / Snow Creek Date 7/13/11

Project ID 07-156

Soil Sample taken at 100 ft. from
the Silver Dyke Adit (Glory Hole).
Soil sample taken at 100 ft. from
the Silver Dyke Adit (Glory Hole).

Soil Sample taken at 100 ft. from
the Silver Dyke Adit (Glory Hole).
Soil sample taken at 100 ft. from
the Silver Dyke Adit (Glory Hole).

Soil Sample taken at 100 ft. from
the Silver Dyke Adit (Glory Hole).
Soil sample taken at 100 ft. from
the Silver Dyke Adit (Glory Hole).

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the Silver Dyke Adit (Glory Hole).
Soil sample taken at 100 ft. from
the Silver Dyke Adit (Glory Hole).

Soil Sample taken at 100 ft. from
the Silver Dyke Adit (Glory Hole).
Soil sample taken at 100 ft. from
the Silver Dyke Adit (Glory Hole).

Soil Sample taken at 100 ft. from
the Silver Dyke Adit (Glory Hole).
Soil sample taken at 100 ft. from
the Silver Dyke Adit (Glory Hole).

Location Carpenter / Snow Creek Date 7/14/11

Project ID 07-156

Silver Dyke Adit (Glory Hole)

07-156-WR9 12:15

Soil Sample on Big Seven 3
Waste Rock Pile. Only one
5-pt composite sample
taken (25 foot sample spacing).

One WR sample was not
sampled (from original
sample design)

WR8

it was not sampled
because pile had talus that
was originally thought to
be WR from 2009 aerial
photograph.

area ... Copper & Snow Creek 7/13/11

Project Client

Silver Dyke Hill

Cut off waste rock sample
taken adjacent to road
WR-12, WR-13.

WR-6 was not taken
because it was all talus

water level 1.00
Water temp 18.8°C Dissolved oxygen 6.1 mg/L

CSC-104

Time 14:45

Temp 18.7°C

pH 7.65

Cond 217.1 µS/cm

D.O. 8.43 mg/L

CSC-105

Time 14:45

Temp 19.33 °C

pH 7.65

Cond 143.7 µS/cm

D.O. 8.23 mg/L

CSC-104A

Time 14:45

Temp 19.32 °C

pH 7.65

Cond 143.8 µS/cm

D.O. 8.24 mg/L

Nichols

CSC - Fall - EPA

9/26/86

CSC-112

Time 16:45

Temp 13.69 °C

pH 7.46

Cond 217.1 µS/cm

D.O. 8.43 mg/L

Sunny, slight breeze, High 60's,
Directly below Upper Tailings, Some
algae but not as much as lower station.
In the shade slightly.

CSC-115

Time 17:15

Temp 9.74 °C

pH 7.61

Cond 182.5 µS/cm

D.O. 8.23 mg/L

Time = 17:

pH = 9.41

Cond = 0.20

D.O. = 0.841

Much shadier, but still sunny, Air
temperatures in mid-60's w/ occasional
breeze

Neihart, MT

9-26-91

CSC - Fall EPA

CSC-114

Time 17:20
Temp 8.69 °C
pH 7.15
Cond 180 $\mu\text{s}/\text{cm}$
D.O. 8.08 mg/L

After 0.2

100% Dissolved

CSC-113

Time 17:45
Temp 11.73 °C
pH 7.42
Cond 211.5 $\mu\text{s}/\text{cm}$
D.O. 8.77 mg/L

PVC tube sample depth = 10 cm

Carpenter/Brown Creek

9/26/11

Temp/C

DO

Conc.

CSC 101

1100

9/26/11

Temp: 8.68
pH: 7.78
Conc: 163.6
DO: 9.61

Beautiful fall day. Water is very clear. Some leaves falling into water. Small influence of water from upstream tributary (maybe 1 CFS?)

Location

Date

Project / Client

①

CSC-103

1238

9/26/11

JW

Temp: 9.19 °C

pH: 7.56

Sp Cond: 181.5

DO: 9.59

Warm fall day. Water clear & cold

Slight breeze. Some filamentous
algae ~~among~~ among large
cobbles in stream.

Good riparian area along banks.

Raspberry bushes along bank.

Areas of silt and sediment
common in stream. Some
large cobbles.

Location

Date

Project / Client

CSC-102

(2.44)

9/26/11

JW

Temp: 10.35 °C

pH: 8.15

Sp Cond: 159.5

DO: 9.37

Clear, warm fall day. Aspens
turned yellow and other plants
red and yellow. Slightly breezy.
Very large boulders along banks
and in stream. Cobble dominant
in stream. Mostly willows and
small trees in riparian area.~~Water~~ Water clear. Some leaves
in stream. Aster flowers ~~still~~
still in bloom. Little sediment.

CSC-103A

9/26/11

14:00

| | |
|--------|-------------|
| Temp | 11.21 °C |
| pH | 7.62 |
| SpCond | 191.1 μS/cm |
| DO | 9.15 mg/L |

Warm fall day low 70s sunny
 slight breeze Very low flow
 compared to Spring event. Water
 slightly warmer than Bolt Creek &
 Carpenter Creek at confluence w/ BC.
 Some filamentous algae among large
 cobbles Not too difficult to get
 sediment sample as there were
 depositional pools. Mostly open
 within riparian zone.

Site 103A located @ 2nd bridge
 crossing up carpenter creek road, sample
 above bridge crossing.

Site 116A

9/26/11

Site 116 - Carpenter Creek

CSC-116A

Time: 16:30

Temp: 15.61 °C

pH: 7.31.30

Conduct: 221.6 μS/cm

DO: 7.84 mg/L

Site just above bridge, site just below
 Carpenter Creek pile

CSC-OP1 9/27/11 0920

Below 116A - Trimble lot lung
 collected in Spring Sampling event
 sit adjacent to downtown pond
 @ multi cabin site, both sit below
 where 2 forks of CSC join.

Temp 6.51 °C

pH 7.05

SC 236.5 μS/cm

DO 9.74 mg/L

flows

Sediment and Surface Water collected

Location

Date

Project / Client

Location

Date

Project / Client

CSC-116A 9/27/11 1000 DW

Temp °C = 6.34

pH = 7.26

Conduct mS/cm = 154.3

Baro Hg = 24.04

RDO mg/l = 10.00

This was the original 116ft. Spaw creek has moved. Influence is captured at CSC opp. 1, Carpenter braided a new CSC opp. 1. Located at pit tag station

and PW

* Dug 2 collected here (sed/collected but no labeling chains)

* No Sed tox test dug collected

a

CSC-118 9/27/11 1050 DW

Temp °C = 7.20

pH = 7.60

Conduct mS/cm = 102.6

Baro Hg = 24.01

RDO mg/l = 9.40

CSC-116 Above 1300' creek in Carpenter

Temp °C = 7.48

pH = 7.63

Conduct mS/cm = 87.44

Baro Hg = 24.01

RDO mg/l = 9.46

Flume Height (1 inch flume)

Front 0.1

Rear 0.01

CSC-117 9/27/11

Flume 1 inch - used

.28 front - 0.06 Rear

pictures 46 & 47

In-situ readings

T = 13.05 °C

pH 3.56

SC 1836 mS/cm

DO 8.27 mg/l

Location Carp River 9/27/11

Project / Client

CSC 117A 9/27/11 1315 DW

Temp C 11.97

pH 3.31

Baro Hg 23.78

Conductivity 2394

DO mg/l 8.40

Flows

1" flume

front 0.26

rear 0.05

CSC - 119 9/27/11 1345 DW

Flows

1" Flume

front = .17

near = .03

Temp 17.07°C

Baro = 23.89 Hg

pH 7.7

cond 175.9 $\mu\text{g}/\text{dm}^3$

DO 7.87 mg/l

CSC 120A

1345

R3

Temp 7.59

pH 7.70

Conductivity 80.02

DO 9.43

Baro 23.88

Stream in excellent condition. New Vehicle rut marks 50 ft below station. Possibly crossed creek to reach tail pile on the other side. Beautiful fall day.

This station should have been reference for this creek. I moved pw and sed toy test to this location. DW.

Location

Date

Project / Client

CSC-120 9/27/11 1515 DW

Temp = 8.43

pH = 7.68

Baro "Hg = 23.64

Cond. $\mu\text{s}/\text{cm}$ = 75.62

RDO = 9.44

Location

Date

Project / Client

CSC-106

9/27/11
17:15

JW

Temp: 9.44 °C

pH: 7.44

Barotge: 24.11

Cond. $\mu\text{s}/\text{cm}$: 143.9

RDO: 9.33 mg/L

Warm fall day. Slight breeze.
Steep banked forested site. Mixture
of grasses and small trees
along riparian zone. Aster, Columbine,
Knock knock and other plants.

Small cobbled stream with many
pockets of sediment. Large woody
debris in stream and overtop of
stream. Some undercut banks.

Location

Date

Project / Client

CSC-110/107a

9/27/11

T 7.06 °C

17:50

pH 7.57

JW

SC 64.7 μS/cm

DO 9.68 mg/L

Sed, Water and flows collected
above road. Lots of woody debris

CSC-108 9/27/11 1710

USFWS camera pictures #316 + 317

takes up & then downstream

Sed, Water and flows collected

Hydrolab readings

Temp 7.79 °C

pH - 6.80

SC 226 μS/cm

DO 96.6% 9.12 mg/L

Location

Date

Project / Client

CSC-107 9/27/11 1745

Samples collected in one
of the channels in the Wetland
that seemed to contain the
biggest flow. No flows
collected because of the branched
nature of the Wetland
Sediment & Water (Diss + Total)
Collected

Hydrolab readings

T 8.91 °C

pH 6.06

SC 389.5

DO 93% 8.57 mg/L

Pictures taken on USFWS Camera:
318 + 319 - up + down Stream

Location

Date

Project / Client

Location

Date

Project / Client

ST-005

8:20

~~REAR~~(8 ft) REWWS 4ft. 9/28/11

JW

Temp: 7.10 °C

pH: 7.68

Baro Hg: 24.64

Cond $\mu\text{S}/\text{cm}^{\circ}\text{C}$: 152.9

RDO mg/L: 9.99

(12 ft)

Temp: 7.11 °C

pH: 7.74

Baro Hg:

Cond $\mu\text{S}/\text{cm}^{\circ}\text{C}$: 152.6

RDO mg/L: 10.02

(16 ft) Middle of River

Temp: 7.09 °C

pH: 7.70

Baro Hg: 24.66

Cond $\mu\text{S}/\text{cm}^{\circ}\text{C}$: 152.6

RDO mg/L: 10.00

(20 ft)

Temp: 7.09 °C

pH: 7.75

Conductivity: 152.4

RDO: 10.03

(24 ft) LEW

Temp: 7.09 °C

pH: 7.75

cond $\mu\text{S}/\text{cm}^{\circ}\text{C}$: 152.4

RDO: 10.04

Cool, cloudy overcast day. Large boulders in rocky stream. Lots of small trees and brush along bank. ~~old~~ ^{fallen} bridge. Large ponderosa & large pines along stream. Woody debris on banks. Some moss on rocks along shore. Little sediment.

ST005A 9/28/11 0950 DW

Temp °C 11.7
RDO mg/L 8.19
Condo µs/cm 259.4
pH 7.11
Baro "Hg 24.76

Sample from rock on lower end ~~outfall~~
of wetland (West end). Pooled
water - No Flow

ST005B 9/28/11 0950 DW

Temp 11.45
RDO 8.19
Condo 259.2
pH 7.08
Baro 24.66

Sample from outfall of Wetland @
Repository. Small channel but many
braids and seeps. No flow measured

Location _____ Date _____

Project / Client _____

ST004 9/28/11 00:15 RH

Temp °C 7.63
RDO mg/L 10.05
Condo µs/cm 251.0
pH 7.84
Baro "Hg 24.64

Sample below wooden bridge in
Belt Creek. Photo taken

ST-014 9/28/11 11:00 JW

Temp °C 9.07°C
RDO mg/L 9.69
Condo µs/cm 150.4
pH 7.92
Baro Hg 24.57

Sampled near Hwy sign. Clear, windy, fall
day. Steep rocky bank with rocky
boulders and small trees. Grass on
bank next to Hwy. Large cobble stream
bottom.

Location

Date

Project / Client

STO16

9/28/11 1250

flows collected using Small
funnel downstream of Rd along old cabin
upstream end - 0.2
down 0.04

-orange stained stream
pictures 333 & 331 on USFWS
camera

Hydrolab Readings

T 13.94

SC 543.4

DO - 100.3% 8.25 mg/L

pH - 7.70

Location

Date

Project / Client

STO08

9/28/11 1330

Waste, Sediment & flows

Collected

Hydro lab readings

T 9.91

pH 7.96

SC 149.2

DO 102.1% 9.15 mg/L

Pictures taken w/ USFWS camera.
Up + then Down Stream
picture #'s 332 - 334

Location _____

Date _____

Project / Client _____

ST009B - 9/28/11 1345

Sediment ad water collected
 no flows collected, water barely
 flowing - Samples collected upstream
 of Rd culvert.

Hydrolab readings

T 10.52

pH 6.82

SC 150.7

DO 59.4% 5.25 mg/L

pictures taken of USFOS camera
 336 + 337 (down + then upstream)

Location _____

Date _____

Project / Client _____

ST015 - 9/28/11 1100

Small flume used to
 collect flows downstream of
 road

Front flume reading 0.13
 back - 0.02

Hydrolab readings

T 10.84

pH 6.27

SC 425.6

DO 96.3% 8.42 mg/L

USFOS camera used for pictures
 325 - 6 taken down + up stream

Location

Date

Project / Client

Location

Date

Project / Client

ST015 A 9/28/11 1115
Water, Sed & flows collected

Hydrolab readings

T 8.37

pH 7.84

Sc 152.3

DO 102% 9.5mg/L

USFWS Camera used pictures 327-9

ST009 A - 9/28/11 RB

1430

Hydrolab readings

Temp 15.09°C

pH 7.20

Sc 92.7

DO 122% 9.77 mg/L

Sed+water collected near fire pit
picture on USFWS camera 339

ST009 - 9/28/11 RH 1415

Tributary dry - Sample collected
@ Mouth in wetland

Hydrolab readings

T 15.04°C

pH 7.02

Sc 93.5

DO 114% 9.17 mg/L

Picture taken on USFWS Camera
338

Location _____

Date _____

Project / Client _____

STO16A

9/28/11 13:00 JW

Temp: 9.87°C

pH: 7.95

Cond: 146.6 $\mu\text{s}/\text{cm}$

RDO: 9.46 mg/L

B. Hg: 24.58

Sampled behind Mayor's house, Rocky Banks
 and cobbly wide stream bed. Healthy
 riparian zone. Banks covered w/ grass and
 small trees, some shading stream.

ST-010

9/28/11 14:10 JW

Temp °C 9.02

RDO mg/L 9.50

Cond $\mu\text{s}/\text{cm}$ 150.8

pH 7.86

Baro "Hg 24.46

Sample taken on South side of wooden bridge.
 Lots of large willows thickly growing and
 overhanging banks. Large cobble. Few boulders.
 Steeper section of stream here, fast flow.

Location _____

Date _____

Project / Client _____

STO10A

9/28/11

15:15

Temp °C 10.60

pH 7.93

Cond $\mu\text{s}/\text{cm}$ 161.3

RDO 8.84

Sampled at camping site. Large
 boulders in stream. Fish cage
 situated in bank vegetation

Sampling Activities Report
Carpenter Creek -Cascade County, Montana
Final, Revision 0

Attachment C
Site Photos

Attachment C

Carpenter Creek Site Photos



CSC-101



CSC-103



CSC-116



CSC-117

Attachment C

Carpenter Creek Site Photos



CSC-117A



CSC-118



CSC-119



CSC-120

Attachment C

Carpenter Creek Site Photos



CSC-120A



CSC-109/110A



CSC-Opp-1



ST-004

Attachment C

Carpenter Creek Site Photos



ST-005B



ST-005



ST-005A



ST-010

Sampling Activities Report
Carpenter Creek -Cascade County, Montana
Final, Revision 0

Attachment D
Habitat Assessment Field Data Sheets

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (FRONT)

| | | |
|-------------------------------------|--|-------------------|
| STREAM NAME <i>Eel Creek</i> | LOCATION <i>CSC-101</i> | |
| STATION # _____ RIVERMILE _____ | STREAM CLASS _____ | |
| LAT _____ LONG _____ | RIVER BASIN _____ | |
| STORET # _____ | AGENCY <i>USEPA</i> | |
| INVESTIGATORS <i>SA</i> | | |
| FORM COMPLETED BY <i>Steve Puer</i> | DATE <i>9/26/11</i> TIME <i>13:25</i> AM PM | REASON FOR SURVEY |

| Habitat Parameter | Condition Category | | | | | | | |
|---|---|---|---|--|--|--|--|--|
| | Optimal | Suboptimal | Marginal | Poor | | | | |
| 1. Epifaunal Substrate/ Available Cover | Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient). | 40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale). | 20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed. | Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking. | | | | |
| SCORE <i>16</i> | 20 19 18 17 <i>16</i> | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | | | | |
| 2. Embeddedness | Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space. | Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment. | Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment. | Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment. | | | | |
| SCORE <i>20</i> | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | | | | |
| 3. Velocity/Depth Regime | All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is ≥ 0.5 m.) | Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes). | Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low). | Dominated by 1 velocity/ depth regime (usually slow-deep). | | | | |
| SCORE <i>20</i> | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | | | | |
| 4. Sediment Deposition | Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition. | Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools. | Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. | Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition. | | | | |
| SCORE <i>19</i> | 20 <i>19</i> 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | | | | |
| 5. Channel Flow Status | Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. | Water fills >75% of the available channel; or <25% of channel substrate is exposed. | Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed. | Very little water in channel and mostly present as standing pools. | | | | |
| SCORE <i>17</i> | 20 19 18 <i>(17)</i> 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | | | | |

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (BACK)

| Habitat Parameter | | Condition Category | | | | | | | |
|---|---------------|--|--|---|---|----------------|----------------|------------|-------------|
| | | Optimal | | Suboptimal | | Marginal | | Poor | |
| | | Score | Description | Score | Description | Score | Description | Score | Description |
| 6. Channel Alteration <i>Bridge and Road erosion evident from past 2 years</i> | SCORE 15 | Channelization or dredging absent or minimal; stream with normal pattern. | Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present. | Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted. | Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely. | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 |
| 7. Frequency of Riffles (or bends) | SCORE 11 | Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important. | Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15. | Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25. | Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25. | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 |
| 8. Bank Stability (score each bank) Note: determine left or right side by facing downstream. | SCORE 10 (LB) | Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected. | Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion. | Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods. | Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars. | Left Bank 10 9 | 8 7 6 | 5 4 3 | 2 1 0 |
| | SCORE 10 (RB) | Right Bank 10 9 | 8 7 6 | 5 4 3 | 2 1 0 | | | | |
| 9. Vegetative Protection (score each bank) | SCORE 11 (LB) | More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. | 70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining. | 50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining. | Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height. | Left Bank 10 9 | 8 7 6 | 5 4 3 | 2 1 0 |
| | SCORE 9 (RB) | Right Bank 10 9 | 8 7 6 | 5 4 3 | 2 1 0 | | | | |
| 10. Riparian Vegetative Zone Width (score each bank riparian zone) | SCORE 10 (LB) | Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone. | Width of riparian zone 12-18 meters; human activities have impacted zone only minimally. | Width of riparian zone 6-12 meters; human activities have impacted zone a great deal. | Width of riparian zone <6 meters; little or no riparian vegetation due to human activities. | Left Bank 10 9 | 8 7 6 | 5 4 3 | 2 1 0 |
| | SCORE 10 (RB) | Right Bank 10 9 | 8 7 6 | 5 4 3 | 2 1 0 | | | | |

Total Score _____

*July 89
impacting scoring*

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (FRONT)

| | | | | |
|--|-------------------------|--|-------------------|--|
| STREAM NAME <i>Belt Creek</i> | LOCATION <i>65C-102</i> | | | |
| STATION # | RIVERMILE | STREAM CLASS | | |
| LAT | LONG | RIVER BASIN | | |
| STORET # | AGENCY | | | |
| INVESTIGATORS <i>SA</i> | | | | |
| FORM COMPLETED BY <i>Steve Ave.</i> | | DATE <i>9/26/11</i> TIME <i>14:00</i> AM PM | REASON FOR SURVEY | |

| Parameters to be evaluated in sampling reach | Habitat Parameter | Condition Category | | | | | |
|--|---|--|---|---|--|--|--|
| | | Optimal | Suboptimal | Marginal | Poor | | |
| | 1. Epifaunal Substrate/ Available Cover | Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and not transient). | 40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale). | 20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed. | Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking. | | |
| | SCORE <i>16</i> | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | | |
| | 2. Embeddedness | Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space. | Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment. | Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment. | Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment. | | |
| | SCORE <i>20</i> | (20) 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | | |
| | 3. Velocity/Depth Regime | All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.) | Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes). | Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low). | Dominated by 1 velocity/depth regime (usually slow-deep). | | |
| | SCORE <i>20</i> | (20) 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | | |
| | 4. Sediment Deposition | Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition. | Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools. | Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. | Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition. | | |
| | SCORE <i>20</i> | (20) 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | | |
| | 5. Channel Flow Status | Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. | Water fills >75% of the available channel; or <25% of channel substrate is exposed. | Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed. | Very little water in channel and mostly present as standing pools. | | |
| | SCORE <i>19</i> | 20 (19) 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | | |

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (BACK)

| Habitat Parameter | | Condition Category | | | | | | | | | | | | | | | | | | | | | | | |
|--|--------|--|----|--|----|---|----|---|----|----|----|----|---|---|---|---|---|---|---|---|---|---|--|--|--|
| | | Optimal | | Suboptimal | | Marginal | | Poor | | | | | | | | | | | | | | | | | |
| 6. Channel Alteration | | Channelization or dredging absent or minimal; stream with normal pattern. | | Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present. | | Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted. | | Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely. | | | | | | | | | | | | | | | | | |
| SCORE | 19 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | |
| 7. Frequency of Riffles (or bends) | | Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important. | | Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15. | | Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25. | | Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25. | | | | | | | | | | | | | | | | | |
| SCORE | 19 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | |
| 8. Bank Stability (score each bank) | | Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected. | | Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion. | | Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods. | | Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars. | | | | | | | | | | | | | | | | | |
| Note: determine left or right side by facing downstream. | | Left Bank | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | | | | |
| SCORE | 10(LB) | Right Bank | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | | | | |
| 9. Vegetative Protection (score each bank) | | More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. | | 70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining. | | 50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining. | | Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height. | | | | | | | | | | | | | | | | | |
| SCORE | 10(LB) | Left Bank | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | | | | |
| SCORE | 10(RB) | Right Bank | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | | | | |
| 10. Riparian Vegetative Zone Width (score each bank riparian zone) | | Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone. | | Width of riparian zone 12-18 meters; human activities have impacted zone only minimally. | | Width of riparian zone 6-12 meters; human activities have impacted zone a great deal. | | Width of riparian zone <6 meters; little or no riparian vegetation due to human activities. | | | | | | | | | | | | | | | | | |
| SCORE | 10(LB) | Left Bank | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | | | | |
| SCORE | 10(RB) | Right Bank | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | | | | |

Total Score _____

Handwritten
Score

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (FRONT)

| | | | |
|--|--|-------------------|--|
| STREAM NAME <i>Capester Creek</i> | LOCATION <i>CSC-103</i> | | |
| STATION # _____ RIVERMILE _____ | STREAM CLASS | | |
| LAT _____ LONG _____ | RIVER BASIN | | |
| STORET # | AGENCY | | |
| INVESTIGATORS <i>SA</i> | | | |
| FORM COMPLETED BY <i>Steve Auer</i> | DATE <i>9/26/11</i> TIME <i>14:20</i> AM PM | REASON FOR SURVEY | |

| Parameters to be evaluated in sampling reach | Habitat Parameter | Condition Category | | | | | | | |
|--|---|---|---|---|--|--|--|------|--|
| | | Optimal | | Suboptimal | | Marginal | | Poor | |
| | 1. Epifaunal Substrate/ Available Cover | Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient). | 40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale). | 20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed. | | Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking. | | | |
| | SCORE <i>17</i> | 20 19 18 <i>(17)</i> 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | | | | |
| | 2. Embeddedness | Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space. | Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment. | Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment. | Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment. | | | | |
| | SCORE <i>12</i> | 20 19 18 17 16 | 15 14 13 <i>(12)</i> 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | | | | |
| | 3. Velocity/Depth Regime <i>No deep regi</i> | All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.) | Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes). | Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low). | Dominated by 1 velocity/depth regime (usually slow-deep). | | | | |
| | SCORE <i>10</i> | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | | | | |
| | 4. Sediment Deposition | Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition. | Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools. | Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. | Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition. | | | | |
| | SCORE <i>15</i> | 20 19 18 17 16 | <i>(15)</i> 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | | | | |
| | 5. Channel Flow Status | Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. | Water fills >75% of the available channel; or <25% of channel substrate is exposed. | Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed. | Very little water in channel and mostly present as standing pools. | | | | |
| | SCORE <i>13</i> | 20 19 18 17 16 | 15 14 <i>(13)</i> 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | | | | |

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (BACK)

| Parameters to be evaluated broader than sampling reach | Habitat Parameter | Condition Category | | | | | | | | |
|--|--|--|----------------|--|-------------|---|----------|---|------|--|
| | | Optimal | | Suboptimal | | | Marginal | | Poor | |
| | | | | | | | | | | |
| | 6. Channel Alteration | Channelization or dredging absent or minimal; stream with normal pattern. | | Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present. | | Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted. | | Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely. | | |
| | SCORE 19 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | | | | | |
| | 7. Frequency of Riffles (or bends) | Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important. | | Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15. | | Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25. | | Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25. | | |
| | SCORE 20 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | | | | | |
| | 8. Bank Stability (score each bank) | Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected. | | Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion. | | Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods. | | Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars. | | |
| | Score 7 (LB) | Left Bank 10 9 | 8 7 6 | 5 4 3 | 2 1 0 | | | | | |
| | Score 9 (RB) | Right Bank 10 9 | 8 7 6 | 5 4 3 | 2 1 0 | | | | | |
| | 9. Vegetative Protection (score each bank) | More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. | | 70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining. | | 50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining. | | Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height. | | |
| | Score 8 (LB) | Left Bank 10 9 | 8 7 6 | 5 4 3 | 2 1 0 | | | | | |
| | Score 8 (RB) | Right Bank 10 9 | 8 7 6 | 5 4 3 | 2 1 0 | | | | | |
| | 10. Riparian Vegetative Zone Width (score each bank riparian zone) | Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone. | | Width of riparian zone 12-18 meters; human activities have impacted zone only minimally. | | Width of riparian zone 6-12 meters; human activities have impacted zone a great deal. | | Width of riparian zone <6 meters; little or no riparian vegetation due to human activities. | | |
| | Score 5 (LB) | Left Bank 10 9 | 8 7 6 | 5 4 3 | 2 1 0 | | | | | |
| | Score 9 (RB) | Right Bank 10 9 | 8 7 6 | 5 4 3 | 2 1 0 | | | | | |

Total Score _____

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (FRONT)

| | | |
|-------------------------------------|--|-------------------|
| STREAM NAME <i>Carpenter Creek</i> | LOCATION <i>CSC-104</i> | |
| STATION # <i>RIVERMILE</i> | STREAM CLASS | |
| LAT <i></i> | LONG <i></i> | |
| STORET # | RIVER BASIN | |
| INVESTIGATORS <i>SA</i> | AGENCY | |
| FORM COMPLETED BY <i>Steve Ayer</i> | DATE <i>9/26/11</i> TIME <i>15:30</i> AM PM | REASON FOR SURVEY |

| Habitat Parameter | Condition Category | | | | | | | | | | | | | | | | | | | | |
|---|--|----|------------|---|-----------|----------|---|------|----|--|----|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | Suboptimal | | | Marginal | | Poor | | | | | | | | | | | | | |
| 1. Epifaunal Substrate/ Available Cover | Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and not transient). | | | 40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale). | | | 20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed. | | | | | | | | | | | | | | |
| SCORE <i>16</i> | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| 2. Embeddedness | Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space. | | | Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment. | | | Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment. | | | Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment. | | | | | | | | | | | |
| SCORE <i>16</i> | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| 3. Velocity/Depth Regime | All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.) | | | Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes). | | | Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low). | | | Dominated by 1 velocity/ depth regime (usually slow-deep). | | | | | | | | | | | |
| SCORE <i>10</i> | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| 4. Sediment Deposition | Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition. | | | Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools. | | | Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. | | | Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition. | | | | | | | | | | | |
| SCORE <i>17</i> | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| 5. Channel Flow Status | Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. | | | Water fills >75% of the available channel; or <25% of channel substrate is exposed. | | | Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed. | | | Very little water in channel and mostly present as standing pools. | | | | | | | | | | | |
| SCORE <i>15</i> | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |

Parameters to be evaluated in sampling reach

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (BACK)

| Parameters to be evaluated broader than sampling reach | Habitat Parameter | Condition Category | | | | | | | |
|--|--|--|--|---|---|--|--|--|--|
| | | Optimal | Suboptimal | Marginal | Poor | | | | |
| | 6. Channel Alteration | Channelization or dredging absent or minimal; stream with normal pattern. | Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging (greater than past 20 yr) may be present, but recent channelization is not present. | Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted. | Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely. | | | | |
| | SCORE 17 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | | | | |
| | 7. Frequency of Riffles (or bends) | Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important. | Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15. | Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25. | Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25. | | | | |
| | SCORE 18 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | | | | |
| | 8. Bank Stability (score each bank) Note: determine left or right side by facing downstream. | Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected. | Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion. | Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods. | Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars. | | | | |
| | SCORE 5 (LB) | Left Bank 10 9 | 8 7 6 | 5 4 3 | 2 1 0 | | | | |
| | SCORE 1 (RB) | Right Bank 10 9 | 8 7 6 | 5 4 3 | 2 1 0 | | | | |
| | 9. Vegetative Protection (score each bank) | More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. | 70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining. | 50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining. | Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height. | | | | |
| | SCORE 1 (LB) | Left Bank 10 9 | 8 7 6 | 5 4 3 | 2 1 0 | | | | |
| | SCORE 5 (RB) | Right Bank 10 9 | 8 7 6 | 5 4 3 | 2 1 0 | | | | |
| | 10. Riparian Vegetative Zone Width (score each bank riparian zone) | Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone. | Width of riparian zone 12-18 meters; human activities have impacted zone only minimally. | Width of riparian zone 6-12 meters; human activities have impacted zone a great deal. | Width of riparian zone <6 meters; little or no riparian vegetation due to human activities. | | | | |
| | SCORE 3 (LB) | Left Bank 10 9 | 8 7 6 | 5 4 3 | 2 1 0 | | | | |
| | SCORE 4 (RB) | Right Bank 10 9 | 8 7 6 | 5 4 3 | 2 1 0 | | | | |

Total Score _____

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (FRONT)

| | | | | |
|--|-------------------------|-------------------------|-------------------|--|
| STREAM NAME <i>300</i> | LOCATION <i>CSC-105</i> | | | |
| STATION # | RIVERMILE | STREAM CLASS | | |
| LAT | LONG | RIVER BASIN | | |
| STORET # | AGENCY | | | |
| INVESTIGATORS <i>SA</i> | | | | |
| FORM COMPLETED BY <i>Steve Heer</i> | DATE <i>9/26/11</i> | TIME <i>15:45</i> AM PM | REASON FOR SURVEY | |

| Habitat Parameter | Condition Category | | | | |
|---|---|---|---|--|--|
| | Optimal | Suboptimal | Marginal | Poor | |
| 1. Epifaunal Substrate/ Available Cover | Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient). | 40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale). | 20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed. | Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking. | |
| SCORE <i>20</i> | (20) 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | |
| 2. Embeddedness | Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space. | Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment. | Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment. | Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment. | |
| SCORE <i>19</i> | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | |
| 3. Velocity/Depth Regime | All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.) | Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes). | Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low). | Dominated by 1 velocity/ depth regime (usually slow-deep). | |
| SCORE <i>13</i> | 20 19 18 17 16 | 15 14 (13) 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | |
| 4. Sediment Deposition | Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition. | Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools. | Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. | Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition. | |
| SCORE <i>20</i> | (20) 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | |
| 5. Channel Flow Status | Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. | Water fills >75% of the available channel; or <25% of channel substrate is exposed. | Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed. | Very little water in channel and mostly present as standing pools. | |
| SCORE <i>20</i> | (20) 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | |

Parameters to be evaluated in sampling reach

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (BACK)

| Habitat Parameter | Condition Category | | | | | | | | | | | | | | | | | | | | |
|--|--|----|------------|----|----|--|----|----|------|----|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | Suboptimal | | | Marginal | | | Poor | | | | | | | | | | | | |
| 6. Channel Alteration | Channelization or dredging absent or minimal; stream with normal pattern. | | | | | Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present. | | | | | Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted. | | | | | Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely. | | | | | |
| SCORE <u>20</u> | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| 7. Frequency of Riffles (or bends) | Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important. | | | | | Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15. | | | | | Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25. | | | | | Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25. | | | | | |
| SCORE <u>20</u> | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| 8. Bank Stability (score each bank) | Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected. | | | | | Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion. | | | | | Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods. | | | | | Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars. | | | | | |
| Note: determine left or right side by facing downstream. | | | | | | | | | | | | | | | | | | | | | |
| SCORE <u>10</u> (LB) | Left Bank | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | |
| SCORE <u>10</u> (RB) | Right Bank | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | |
| 9. Vegetative Protection (score each bank) | More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. | | | | | 70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining. | | | | | 50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining. | | | | | Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height. | | | | | |
| SCORE <u>10</u> (LB) | Left Bank | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | |
| SCORE <u>10</u> (RB) | Right Bank | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | |
| 10. Riparian Vegetative Zone Width (score each bank riparian zone) | Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone. | | | | | Width of riparian zone 12-18 meters; human activities have impacted zone only minimally. | | | | | Width of riparian zone 6-12 meters; human activities have impacted zone a great deal. | | | | | Width of riparian zone <6 meters: little or no riparian vegetation due to human activities. | | | | | |
| SCORE <u>10</u> (LB) | Left Bank | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | |
| SCORE <u>10</u> (RB) | Right Bank | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | |

Total Score _____

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (FRONT)

| | | | |
|---|---------------------|--|-------------------|
| STREAM NAME <i>Casement</i> | LOCATION | | |
| STATION # <u>1114</u> | RIVERMILE | STREAM CLASS | |
| LAT | LONG | RIVER BASIN <i>Belt Creek</i> | |
| STORET # | AGENCY <i>EPA</i> | | |
| INVESTIGATORS | | | |
| FORM COMPLETED BY <i>Dan Wall/Steve Auer</i> | DATE <u>9/26/01</u> | TIME <u>16:30</u> AM <input checked="" type="checkbox"/> | REASON FOR SURVEY |

| Habitat Parameter | Condition Category | | | | | | | |
|---|--|----|---|----|---|-----------------------|--|-------------|
| | Optimal | | Suboptimal | | Marginal | | Poor | |
| 1. Epifaunal Substrate/ Available Cover | Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and not transient). | | 40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale). | | 20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed. | | Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking. | |
| SCORE <u>11</u> | 20 | 19 | 18 | 17 | 16 | 15 14 13 12 <u>11</u> | 10 9 8 7 6 | 5 4 3 2 1 0 |
| 2. Embeddedness | Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space. | | Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment. | | Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment. | | Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment. | |
| SCORE <u>11</u> | 20 | 19 | 18 | 17 | 16 | 15 14 13 12 <u>11</u> | 10 9 8 7 6 | 5 4 3 2 1 0 |
| 3. Velocity/Depth Regime | All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.) | | Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes). | | Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low). | | Dominated by 1 velocity/ depth regime (usually slow-deep). | |
| SCORE <u>10</u> | 20 | 19 | 18 | 17 | 16 | 15 14 13 12 <u>11</u> | 10 9 8 7 6 | 5 4 3 2 1 0 |
| 4. Sediment Deposition | Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition. | | Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools. | | Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. | | Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition. | |
| SCORE <u>10</u> | 20 | 19 | 18 | 17 | 16 | 15 14 13 12 <u>11</u> | 10 9 8 7 6 | 5 4 3 2 1 0 |
| 5. Channel Flow Status | Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. | | Water fills >75% of the available channel; or <25% of channel substrate is exposed. | | Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed. | | Very little water in channel and mostly present as standing pools. | |
| SCORE <u>6</u> | 20 | 19 | 18 | 17 | 16 | 15 14 13 12 <u>11</u> | 10 9 8 7 <u>6</u> | 5 4 3 2 1 0 |

Parameters to be evaluated in sampling reach

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (BACK)

| Parameters to be evaluated broader than sampling reach | Habitat Parameter | Condition Category | | | | | | | |
|--|--|--|----------------|--|--|---|----------|---|------|
| | | Optimal | | Suboptimal | | | Marginal | | Poor |
| | | | | | | | | | |
| | 6. Channel Alteration | Channelization or dredging absent or minimal; stream with normal pattern. | | Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present. | | Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted. | | Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely. | |
| | SCORE 8 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 (8) 7 6 | | 5 4 3 2 1 0 | | | |
| | 7. Frequency of Riffles (or bends) | Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important. | | Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15. | | Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25. | | Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25. | |
| | SCORE 16 | 20 19 18 17 (16) | 15 14 13 12 11 | 10 9 8 7 6 | | 5 4 3 2 1 0 | | | |
| | 8. Bank Stability (score each bank) | Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected. Note: determine left or right side by facing downstream. | | Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion. | | Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods. | | Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars. | |
| | SCORE 3 (LB) | Left Bank 10 9 | 8 7 6 | 5 4 (3) | | 2 1 0 | | | |
| | SCORE 2 (RB) | Right Bank 10 9 | 8 7 6 | 5 4 (3) | | 2 1 0 | | | |
| | 9. Vegetative Protection (score each bank) | More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. | | 70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining. | | 50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining. | | Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height. | |
| | SCORE 4 (LB) | Left Bank 10 9 | 8 7 6 | 5 (4) 3 | | 2 1 0 | | | |
| | SCORE 3 (RB) | Right Bank 10 9 | 8 7 6 | 5 4 (3) | | 2 1 0 | | | |
| | 10. Riparian Vegetative Zone Width (score each bank riparian zone) | Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone. | | Width of riparian zone 12-18 meters; human activities have impacted zone only minimally. | | Width of riparian zone 6-12 meters; human activities have impacted zone a great deal. | | Width of riparian zone <6 meters; little or no riparian vegetation due to human activities. | |
| | SCORE 4 (LB) | Left Bank 10 9 | 8 7 (6) | 5 4 3 | | 2 1 0 | | | |
| | SCORE 7 (RB) | Right Bank 10 9 | 8 (7) (6) | 5 4 3 | | 2 1 0 | | | |

Total Score _____

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (FRONT)

| | | | | |
|--|-------------------------|--------------------------|-------|-------------------|
| STREAM NAME <i>Casper Creek</i> | LOCATION <i>CSC-113</i> | | | |
| STATION # _____ | RIVERMILE _____ | STREAM CLASS | | |
| LAT _____ | LONG _____ | RIVER BASIN | | |
| STORET # | | AGENCY | | |
| INVESTIGATORS <i>SA</i> | | | | |
| FORM COMPLETED BY <i>Steve Auer</i> | | DATE _____ TIME _____ | AM PM | REASON FOR SURVEY |

| Parameters to be evaluated in sampling reach | Habitat Parameter | Condition Category | | | | |
|--|---|--|---|---|--|--|
| | | Optimal | Suboptimal | Marginal | Poor | |
| | 1. Epifaunal Substrate/ Available Cover | Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and not transient). | 40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale). | 20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed. | Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking. | |
| | SCORE <i>13</i> | 20 19 18 17 16 | 15 14 <i>13</i> 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | |
| | 2. Embeddedness | Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space. | Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment. | Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment. | Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment. | |
| | SCORE <i>10</i> | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | |
| | 3. Velocity/Depth Regime | All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.) | Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes). | Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low). | Dominated by 1 velocity/ depth regime (usually slow-deep). | |
| | SCORE <i>10</i> | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | |
| | 4. Sediment Deposition | Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition. | Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools. | Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. | Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition. | |
| | SCORE <i>9</i> | 20 19 18 17 16 | 15 14 13 12 11 | 10 <i>9</i> 8 7 6 | 5 4 3 2 1 0 | |
| | 5. Channel Flow Status | Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. | Water fills >75% of the available channel; or <25% of channel substrate is exposed. | Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed. | Very little water in channel and mostly present as standing pools. | |
| | SCORE <i>8</i> | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 <i>8</i> 7 6 | 5 4 3 2 1 0 | |

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (BACK)

| Parameters to be evaluated broader than sampling reach | Habitat Parameter | Condition Category | | | | | | | |
|--|--|--|-----------------|--|------------|---|--|---|--|
| | | Optimal | | Suboptimal | | Marginal | | Poor | |
| | 6. Channel Alteration | Channelization or dredging absent or minimal; stream with normal pattern. | | Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present. | | Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted. | | Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely. | |
| | | SCORE 6 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | | | |
| | 7. Frequency of Riffles (or bends) | Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important. | | Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15. | | Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25. | | Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25. | |
| | | SCORE 10 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | | | |
| | 8. Bank Stability (score each bank) | Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected. | | Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion. | | Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods. | | Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars. | |
| | | Note: determine left or right side by facing downstream. | Left Bank 10 9 | 8 7 6 | 5 4 3 | 2 1 0 | | | |
| | | SCORE 2 (LB) | | | | | | | |
| | | SCORE 2 (RB) | Right Bank 10 9 | 8 7 6 | 5 4 3 | 2 1 0 | | | |
| | 9. Vegetative Protection (score each bank) | More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. | | 70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining. | | 50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining. | | Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height. | |
| | | SCORE 0 (LB) | Left Bank 10 9 | 8 7 6 | 5 4 3 | 2 1 0 | | | |
| | | SCORE 1 (RB) | Right Bank 10 9 | 8 7 6 | 5 4 3 | 2 1 0 | | | |
| | | | | | | | | | |
| | 10. Riparian Vegetative Zone Width (score each bank riparian zone) | Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone. | | Width of riparian zone 12-18 meters; human activities have impacted zone only minimally. | | Width of riparian zone 6-12 meters; human activities have impacted zone a great deal. | | Width of riparian zone <6 meters; little or no riparian vegetation due to human activities. | |
| | | SCORE 1 (LB) | Left Bank 10 9 | 8 7 6 | 5 4 3 | 2 1 0 | | | |
| | | SCORE 1 (RB) | Right Bank 10 9 | 8 7 6 | 5 4 3 | 2 1 0 | | | |
| | | | | | | | | | |

Total Score _____

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (FRONT)

| | | | |
|------------------------------------|---------------------------|-------------------------|-------------------|
| STREAM NAME <i>Carpenter Creek</i> | LOCATION <i>CSC - 116</i> | | |
| STATION # <i>6116</i> | RIVERMILE _____ | STREAM CLASS | |
| LAT _____ | LONG _____ | RIVER BASIN <i>Belt</i> | |
| STORET # | | AGENCY <i>EPA</i> | |
| INVESTIGATORS | | | |
| FORM COMPLETED BY | | DATE <i>5/27/01</i> | REASON FOR SURVEY |
| | | TIME <i>100</i> AM PM | |

| Habitat Parameter | Condition Category | | | | | | | | | | | | | | | | | | | | |
|---|--|----|---|----|---|------|--|------|----|----|------|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | Suboptimal | | Marginal | | Poor | | | | | | | | | | | | | | |
| 1. Epifaunal Substrate/ Available Cover | Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient). | | 40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale). | | 20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed. | | Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking. | | | | | | | | | | | | | | |
| SCORE <i>16</i> | 20 | 19 | (18) | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| 2. Embeddedness | Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space. | | Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment. | | Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment. | | Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment. | | | | | | | | | | | | | | |
| SCORE <i>16</i> | 20 | 19 | (18) | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| 3. Velocity/Depth Regime | All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.) | | Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes). | | Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low). | | Dominated by 1 velocity/ depth regime (usually slow-deep). | | | | | | | | | | | | | | |
| SCORE <i>10</i> | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | (10) | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| 4. Sediment Deposition | Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition. | | Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools. | | Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. | | Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition. | | | | | | | | | | | | | | |
| SCORE <i>15</i> | 20 | 19 | 18 | 17 | 16 | (15) | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| 5. Channel Flow Status | Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. | | Water fills >75% of the available channel; or <25% of channel substrate is exposed. | | Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed. | | Very little water in channel and mostly present as standing pools. | | | | | | | | | | | | | | |
| SCORE <i>15</i> | 20 | 19 | 18 | 17 | 16 | 15 | 14 | (13) | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (BACK)

| Habitat Parameter | Condition Category | | | | | | | | |
|---|--|--|---|--|--|---|---|---|--|
| | Optimal | | Suboptimal | | Marginal | | Poor | | |
| 6. Channel Alteration | Channelization or dredging absent or minimal; stream with normal pattern. | | Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present. | | Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted. | | Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely. | | |
| | SCORE <u>14</u> | 20 19 18 17 16 | 15 (14) | 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | | | |
| 7. Frequency of Riffles (or bends) | Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important. | | Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15. | | Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25. | | Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25. | | |
| | SCORE <u>17</u> | 20 19 18 (17) 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | | | | |
| Parameters to be evaluated broader than sampling reach | 8. Bank Stability (score each bank) Note: determine left or right side by facing downstream. | Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected. | | Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion. | | Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods. | | Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars. | |
| | SCORE <u>9</u> (LB) | Left Bank 10 (9) | 8 7 6 | 5 4 3 | 2 1 0 | | | | |
| | SCORE <u>5</u> (RB) | Right Bank 10 9 | (8) 7 6 | 5 4 3 | 2 1 0 | | | | |
| | 9. Vegetative Protection (score each bank) | More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. | | 70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining. | | 50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining. | | Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height. | |
| 10. Riparian Vegetative Zone Width (score each bank riparian zone) | SCORE <u>9</u> (LB) | Left Bank 10 (9) | 8 7 6 | 5 4 3 | 2 1 0 | | | | |
| | | Right Bank 10 9 | (8) 7 6 | 5 4 3 | 2 1 0 | | | | |
| | SCORE <u>9</u> (RB) | | | | | | | | |
| | | | | | | | | | |

Total Score _____

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (FRONT)

| | | | | |
|---------------------------------|-------------------|--------------------------|-------------------------------------|--|
| STREAM NAME <i>Casper River</i> | LOCATION | | | |
| STATION # <u>1164</u> | RIVERMILE | STREAM CLASS | | |
| LAT | LONG | RIVER BASIN <i>B. H.</i> | | |
| STORET # | AGENCY <i>EPA</i> | | | |
| INVESTIGATORS | | | | |
| FORM COMPLETED BY <i>DW</i> | | DATE <i>7/27/11</i> | REASON FOR SURVEY | |
| | | TIME <i>10 AM</i> | <input checked="" type="radio"/> PM | |

| Habitat Parameter | Condition Category | | | | | | | | | |
|---|--|----|----|---|----|----|---|------|--|--------------------------|
| | Optimal | | | Suboptimal | | | Marginal | | Poor | |
| 1. Epifaunal Substrate/ Available Cover | Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and not transient). | | | 40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale). | | | 20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed. | | Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking. | |
| SCORE <i>13</i> | 20 | 19 | 18 | 17 | 16 | 15 | 14 | (13) | 12 11 | 10 9 8 7 6 5 4 3 2 1 0 |
| 2. Embeddedness | Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space. | | | Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment. | | | Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment. | | Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment. | |
| SCORE <i>14</i> | 20 | 19 | 18 | 17 | 16 | 15 | (14) | 13 | 12 11 | 10 9 8 7 6 5 4 3 2 1 0 |
| 3. Velocity/Depth Regime | All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.) | | | Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes). | | | Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low). | | Dominated by 1 velocity/ depth regime (usually slow-deep). | |
| SCORE <i>10</i> | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 11 | (10) 9 8 7 6 5 4 3 2 1 0 |
| 4. Sediment Deposition | Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition. | | | Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools. | | | Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. | | Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition. | |
| SCORE <i>13</i> | 20 | 19 | 18 | 17 | 16 | 15 | 14 | (13) | 12 11 | 10 9 8 7 6 5 4 3 2 1 0 |
| 5. Channel Flow Status | Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. | | | Water fills >75% of the available channel; or <25% of channel substrate is exposed. | | | Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed. | | Very little water in channel and mostly present as standing pools. | |
| SCORE <i>10</i> | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 11 | (10) 9 8 7 6 5 4 3 2 1 0 |

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (BACK)

| Habitat Parameter | Condition Category | | | | | | | | | |
|--|--|--|------------|------------|----|---|--|---|---|------|
| | Optimal | | | Suboptimal | | | Marginal | | | Poor |
| 6. Channel Alteration | Channelization or dredging absent or minimal; stream with normal pattern. | | | | | Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present. | Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted. | Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely. | | |
| | SCORE 13 | 20 | 19 | 18 | 17 | 16 | 15 14 (13) 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | |
| 7. Frequency of Riffles (or bends) | Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important. | | | | | Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15. | Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25. | Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25. | | |
| | SCORE 11 | 20 | 19 | 18 | 17 | 16 | 15 14 13 12 (11) | 10 9 8 7 6 | 5 4 3 2 1 0 | |
| Parameters to be evaluated broader than sampling reach | 8. Bank Stability (score each bank) Note: determine left or right side by facing downstream. | Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected. | | | | | Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion. | Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods. | Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars. | |
| | | SCORE 6 (LB) | Left Bank | 10 | 9 | 8 | 7 (6) | (5) 4 3 | 2 1 0 | |
| | | SCORE 5 (RB) | Right Bank | 10 | 9 | 8 | 7 6 | (5) 4 3 | 2 1 0 | |
| | 9. Vegetative Protection (score each bank) | More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. | | | | | 70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining. | 50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining. | Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height. | |
| | | SCORE 5 (LB) | Left Bank | 10 | 9 | 8 | 7 6 | (5) 4 3 | 2 1 0 | |
| | | SCORE 5 (RB) | Right Bank | 10 | 9 | 8 | 7 6 | (5) 4 3 | 2 1 0 | |
| 10. Riparian Vegetative Zone Width (score each bank riparian zone) | Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone. | | | | | Width of riparian zone 12-18 meters; human activities have impacted zone only minimally. | Width of riparian zone 6-12 meters; human activities have impacted zone a great deal. | Width of riparian zone <6 meters; little or no riparian vegetation due to human activities. | | |
| | SCORE 5 (LB) | Left Bank | 10 | 9 | 8 | 7 6 | (5) 4 3 | 2 1 0 | | |
| | SCORE 5 (RB) | Right Bank | 10 | 9 | 8 | 7 6 | (5) 4 3 | 2 1 0 | | |

Total Score _____

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (FRONT)

| | | | |
|-----------------------------------|------------------------------------|---|-------------------|
| STREAM NAME <u>CSC-120A</u> | LOCATION <u>Carpenter CSC-120A</u> | | |
| STATION # _____ | RIVERMILE _____ | STREAM CLASS | |
| LAT _____ | LONG _____ | RIVER BASIN <u>Belt</u> | |
| STORET # _____ | | AGENCY | |
| INVESTIGATORS | | | |
| FORM COMPLETED BY <u>Dan Wall</u> | | DATE <u>134 9/27/10</u> TIME <u>1345</u> AM PM | REASON FOR SURVEY |

| Habitat Parameter | Condition Category | | | | |
|---|---|---|---|--|--|
| | Optimal | Suboptimal | Marginal | Poor | |
| 1. Epifaunal Substrate/ Available Cover | Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient). | 40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale). | 20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed. | Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking. | |
| SCORE <u>18</u> | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | |
| 2. Embeddedness | Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space. | Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment. | Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment. | Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment. | |
| SCORE <u>20</u> | (20) 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | |
| 3. Velocity/Depth Regime | All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.) | Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes). | Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low). | Dominated by 1 velocity/ depth regime (usually slow-deep). | |
| SCORE <u>14</u> | 20 19 18 17 16 | 15 (14) 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | |
| 4. Sediment Deposition | Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition. | Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools. | Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. | Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition. | |
| SCORE <u>17</u> | 20 19 18 (17) 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | |
| 5. Channel Flow Status | Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. | Water fills >75% of the available channel; or <25% of channel substrate is exposed. | Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed. | Very little water in channel and mostly present as standing pools. | |
| SCORE <u>15</u> | 20 19 18 17 16 | (15) 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | |

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (BACK)

| Habitat Parameter | Condition Category | | | | | | | | | | | | | | | | | | | | | |
|--|--|--|------------|-----|------|---|--|----|------|----|--|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | Suboptimal | | | Marginal | | | Poor | | | | | | | | | | | | | |
| 6. Channel Alteration | Channelization or dredging absent or minimal; stream with normal pattern. | | | | | Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present. | | | | | Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely. | | | | | | | | | | | |
| | SCORE 15 | 20 | 19 | 18 | 17 | 16 | (15) | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| 7. Frequency of Riffles (or bends) | Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important. | | | | | Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15. | | | | | Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25. | | | | | Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25. | | | | | | |
| | SCORE 17 | 20 | 19 | 18 | (17) | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| Parameters to be evaluated broader than sampling reach | 8. Bank Stability (score each bank) | Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected. | | | | | Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion. | | | | | Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods. | | | | | Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars. | | | | | |
| | | Left Bank | 10 | (9) | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | |
| | SCORE 9 (LB) | Right Bank | (10) | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | |
| | | Left Bank | 10 | (9) | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | |
| Parameters to be evaluated broader than sampling reach | 9. Vegetative Protection (score each bank) | More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. | | | | | 70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining. | | | | | 50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining. | | | | | Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height. | | | | | |
| | | Left Bank | 10 | (9) | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | |
| | SCORE 10 (RB) | Right Bank | (10) | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | |
| | | Left Bank | 10 | (9) | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | |
| Parameters to be evaluated broader than sampling reach | 10. Riparian Vegetative Zone Width (score each bank riparian zone) | Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone. | | | | | Width of riparian zone 12-18 meters; human activities have impacted zone only minimally. | | | | | Width of riparian zone 6-12 meters; human activities have impacted zone a great deal. | | | | | Width of riparian zone <6 meters; little or no riparian vegetation due to human activities. | | | | | |
| | | Left Bank | 10 | (9) | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | |
| | SCORE 10 (RB) | Right Bank | (10) | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | |
| | | Left Bank | 10 | (9) | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | |

Total Score _____

Someone drove
a tractor into
and across creek.
Localized bat-soup
damage?

See above

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (FRONT)

| | | |
|-----------------------------------|---|-------------------|
| STREAM NAME <u>Belt</u> | LOCATION <u>STO 10A</u> | |
| STATION # <u>RIVERMILE</u> | STREAM CLASS | |
| LAT <u></u> | LONG <u></u> | |
| STORET # | AGENCY <u>Belt</u> | |
| INVESTIGATORS | | |
| FORM COMPLETED BY <u>Dan Wall</u> | DATE <u>9/28/11</u> TIME <u>1515</u> AM PM | REASON FOR SURVEY |

| Habitat Parameter | Condition Category | | | | | | | | | |
|---|--|------|------|------------|------|---|----------|----|----|------|
| | Optimal | | | Suboptimal | | | Marginal | | | Poor |
| 1. Epifaunal Substrate/ Available Cover | Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and not transient). | | | | | 40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale). | | | | |
| SCORE <u>16</u> | 20 | 19 | 18 | 17 | (16) | 15 | 14 | 13 | 12 | 11 |
| 2. Embeddedness | Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space. | | | | | Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment. | | | | |
| SCORE <u>19</u> | 20 | (19) | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 |
| 3. Velocity/Depth Regime | All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.) | | | | | Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes). DW | | | | |
| SCORE <u>15</u> | 20 | 19 | 18 | 17 | 16 | (15) | (16) | 13 | 12 | 11 |
| 4. Sediment Deposition | Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition. | | | | | Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools. | | | | |
| SCORE <u>19</u> | 20 | (19) | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 |
| 5. Channel Flow Status | Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. | | | | | Water fills >75% of the available channel; or <25% of channel substrate is exposed. | | | | |
| SCORE <u>18</u> | 20 | 19 | (18) | 17 | 16 | 15 | 14 | 13 | 12 | 11 |

Parameters to be evaluated in sampling reach

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (BACK)

| Parameters to be evaluated broader than sampling reach | Habitat Parameter | Condition Category | | | | | | | | | | | | | | | | | | | | | | |
|--|--|--------------------|--|-------|--|----|----|----------|----|----|------|----|---|---|---|---|---|---|---|---|---|---|---|--|
| | | Optimal | | | Suboptimal | | | Marginal | | | Poor | | | | | | | | | | | | | |
| | | Score | 13 | 15 DW | 20 | 19 | 18 | 17 | 16 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | |
| | 6. Channel Alteration | | Channelization or dredging absent or minimal; stream with normal pattern. | | Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present. | | | | | | | | Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted. | | | | | Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely. | | | | | | |
| | 7. Frequency of Riffles (or bends) | | Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important. | | Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15. | | | | | | | | Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25. | | | | | Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25. | | | | | | |
| | 8. Bank Stability (score each bank) | | Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected. | | Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion. | | | | | | | | Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods. | | | | | Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars. | | | | | | |
| | SCORE 10 (LB) | | Left Bank 10 | 9 | 8 | 7 | 6 | | | 5 | 4 | 3 | | | 2 | 1 | 0 | | | | | | | |
| | SCORE 10 (RB) | | Right Bank 10 | 9 | 8 | 7 | 6 | | | 5 | 4 | 3 | | | 2 | 1 | 0 | | | | | | | |
| | 9. Vegetative Protection (score each bank) | | More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. | | 70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining. | | | | | | | | 50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining. | | | | | Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height. | | | | | | |
| | SCORE 10 (LB) | | Left Bank 10 | 9 | 8 | 7 | 6 | | | 5 | 4 | 3 | | | 2 | 1 | 0 | | | | | | | |
| | SCORE 8 (RB) | | Right Bank 10 | 9 | 8 | 7 | 6 | | | 5 | 4 | 3 | | | 2 | 1 | 0 | | | | | | | |
| | 10. Riparian Vegetative Zone Width (score each bank riparian zone) | | Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone. | | Width of riparian zone 12-18 meters; human activities have impacted zone only minimally. | | | | | | | | Width of riparian zone 6-12 meters; human activities have impacted zone a great deal. | | | | | Width of riparian zone <6 meters: little or no riparian vegetation due to human activities. | | | | | | |
| | SCORE 10 (LB) | | Left Bank 10 | 9 | 8 | 7 | 6 | | | 5 | 4 | 3 | | | 2 | 1 | 0 | | | | | | | |
| | SCORE 5 (RB) | | Right Bank 10 | 9 | 8 | 7 | 6 | | | 5 | 4 | 3 | | | 2 | 1 | 0 | | | | | | | |

Total Score _____

confined
by road
& parking lot